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ABSTRACT

Eight Minnesota school districts took part in a Statewide career education program involving approximately 570 teachers and 20,000 students from grades 1-12. Alternative models were explored at each site and included orientation and in-service training for teachers, curriculum/instructional materials development, dissemination, and community involvement. Project implementation was the responsibility of local project directors in each school district, with State staff serving as liaison between the school district, State, and Federal agencies involved. The document includes three sections. (1) Final Report: a 3-page summary, an 11-page presentation of project information (time, goals, objectives, procedures, design, evaluation, conclusions, recommendations), and 30 pages of appended material (a position paper and project site goals, descriptions, and curriculum development). (2) A 68-page third-party review of and recommendations regarding project design, context, management, instruction, information, costs, internal evaluation, documentation, and transportability. Nine tables are included; on-site evaluation questions are appended. (3) A System for Evaluating Career Education in Minnesota, 55 pages, a State agency evaluation of the project discussed in terms of formative and summative evaluation methods, with interpretation of the findings; evaluation related forms and data are appended. A table of contents for the entire document is not provided. (LH)

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FINAL REPORT

Project No.: V261035L
Grant No.: OEG-0-72-1572

Research and Development Project in Career Education

Conducted Under
Part C of Public Law 90-576
Title 1, Part C, Sec. 131 (a)

The project reported herein was performed pursuant to a grant from the Bureau of Adult, Vocational, and Technical Education, Office of Education, U.S. Department of Health, Education, and Welfare. Grantees undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

CE 005 731

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September 14, 1973

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I. Summary of the Report

A. Time Period Covered by the Report: March 15, 1972 to September 14, 1973.

B. Goals and Objectives of the Project.

The broad goals and objectives of this project were consistent with the career education goals for students contained in the "Position Paper on Career Education" adopted by the State Board of Education on May 2, 1972. These goals are as follows:

1. Pre-School and Elementary Education - Career Education is an integral part of elementary education. Basic skills taught in the elementary curriculum are essential to career and life fulfillment.

2. Junior High -

    a) Develop a positive attitude toward self through awareness of developing talent, values, and interests as they relate to career goals.

    b) Explore opportunities in the full range of career choices and the competencies required.

    c) Develop ability to plan for meeting individual career goals.

3. Senior High -

    a) Explore occupational opportunities in one or several careers and entry-level competencies required.

    b) Attain competencies necessary for entry into an occupation and/or for specialized education at the post-secondary level.

    c) Relate career choice to a life style based on interests, abilities, needs, and values.

    d) Explore the relationship between all education and individual career goals.

4. Post-Secondary and Continuing Education -

   a) Prepare for entry level and/or advanced level employment.

   b) Upgrade for job stability or career advancement.

   c) Prepare for new or different opportunities appropriate for individual abilities and interests.

C. Procedures Followed.

Multiple sites were used in conducting this project in Minnesota. Eight school districts, representative of various economic-geographic regions of the state were involved in the project. Different models of career education were developed and implemented at the various sites so as to provide a maximum amount of empirical information concerning the program. The comprehensiveness of grade level involvement from site to site varied as well. Project implementation and coordination at each site was the responsibility of a local project director in each school district who was an administrator, counselor, or teacher. A project coordinator from the state staff served as a liaison officer for the three agency levels involved, local school district, state, and federal. Because of a strong concern for obtaining maximum information prerequisite to decision-making, a heavy emphasis was placed on evaluation. Separate and distinct efforts were intitiated in conducting process, product, and third party evaluation.

D. Results: Accomplishments.

Career education programs were developed and implemented at the eight sites in the Minnesota project. Orientation and in-service training of teachers, curriculum/instructional materials development, dissemination, and community involvement are examples of aspects of career education which were addressed. A functional process and product evaluation system was developed and implemented. Approximately 570 teachers and 20,000 students were involved as participants in the project during the grant period.

E. Evaluation.

Three evaluation efforts were initiated at the state level in the course of the project, as well as efforts at the local school districts. A process evaluation system was developed which incorporated optically scanned record sheets and computer printouts to provide monthly feedback to teachers, local project directors, and the project coordinator as concerned process evaluation. Instruments assessing student outcomes were also developed and administered to approximately 17,000 experimental and control students near the close of the 72-73 school year. Additionally, in compliance with regulations contingent upon federal grant recipients, an outside agency was contracted with to provide a third party evaluation.

F. Conclusions and Recommendations.

Considerable progress has been noted in the project during the eighteen months of the grant award. Programs have been developed, implemented, and evaluated. Project personnel have provided assistance to others as resource persons in the diffusion of career education concepts. Generally speaking, career education concepts have been more readily received and integrated into the curriculum at the elementary level than at the secondary level. The following seem to be some of the key factors which must be addressed in successfully moving career education into the mainstream of education.

1) Administrative support at all levels is a necessity.

2) Project directors must be provided with sufficient time and the necessary administrative support to enable them to carry out the responsibilities given to them.

3) In-service training for teachers must be readily available.

4) School time must be made available to teachers to develop the necessary curriculum/instructional materials for integrating career education into the ongoing curriculum.

II. Body of the Report

A. Problem area toward which the project was directed, including references to the original proposal, previous studies and experiments, and related literature.

The broad problem area toward which the Research and Development Project in Career Education in Minnesota was directed may be summarized in one question - How can the career education needs of the target populations in Minnesota be most effectively and efficiently addressed, given the context of the education systems/environment currently existing and tentatively planned for. Implicit within the broad problem area was a series of sub-problem areas or questions which provided the substantive content from which project planning, development, and implementation emanated. Some of the primary sub-problem areas which were considered are presented in the following narrative so as to provide a focus or perspective to the project planning which took place.

No tried and proven models of career education were in existence at the onset of this project. While numerous activities and projects were underway across the nation very little information existed which had been substantiated by experience, replication, and evaluation. The "state of the art" was such that little basis existed for selecting a particular model which could be presented as the exemplary project in career education in Minnesota.

Consistent with the foregoing problem was the diversity of educational settings which exist in Minnesota. Because of socio-economic, geographic-factors, career education programs must be designed which meet the needs of students in local school districts. In essence this means that programs which function effectively in the metropolitan area of Minneapolis-St. Paul are not likely to be transportable to the outstate regions. Likewise, programs designed for the more populous, southern agricultural regions of the state would not be particularly germane to the needs of students residing in the more sparsely populated, mining and pulp wood and resort regions of northern Minnesota.

The necessity for articulating and coordinating efforts with existing and emerging facets of the educational structure/systems of the state was also considered. Minnesota has a highly developed system of 33 post secondary area vocational-technical schools, geographically located throughout the state, to provide students ready access to instruction in about 200 different occupations. In addition, the state also has twenty-one (21) junior-community colleges which conduct terminal vocational-technical programs as well as college transfer programs, seven state colleges and a university for students who wish to pursue a four year college degree.

The development of a system of secondary vocational centers designed for the purpose of making vocational education more accessible to students in rural areas in Minnesota served to complement the career education project. Beginning as a pilot project at two sites in 1970-71, the center concept rapidly grew to the point where approximately 28 centers were functional during the grant period, thus providing an important component to a total program of career education.

Given the nature of the project (Research and Development Project in Career Education) and the broad outcome desired, if successful, (adoption and implementation by other school districts) consideration had to be given to modes and resources by which the concepts of career education could be made known to educational agencies on whom the responsibility for program operation rested. Therefore, the availability of a number of strategically located demonstration sites and experienced resource persons became an integral part of the planning process. Dissemination and diffusion were viewed as key components of a research and development project having as one of its functions the role of a change agent.

Another sub-problem area meriting attention was the matter of project continuation after the funding period was completed. Ample evidence exists of programs which were opperational only while outside funds were provided and concluded when the funding ended. Because the intent of the project was to assist in developing and maintaining an ongoing program of career education (assuming the project would be successful) it was important to consider this matter at the onset of the project.

The foregoing represent some of the major concerns addressed in defining the problem area toward which the project was directed. However, they should be viewed only as some of the major questions or problems which provided a perspective to the project. They do not indicate the total scope or range of matters which were considered in defining the problem area.

B. Goals and Objectives of the Project.

Several levels of goals and objectives existed for the project, each of which must be considered as it relates to the preceding and succeeding levels with which it interfaces.

At its broadest level the long range goal of this and similar projects is the development of articulated, comprehensive career education programs in the state. As was indicated in the previous section relating to the definition of the problem area, selected components of such a program currently exist in the state, some are in the developmental stages, while others are as yet in the planning stage. A good start has been made on a total program of career education, but it will of necessity be a long range effort. Shown in Appendix A is the "Position Paper on Career Education" adopted by the State Board of Education on May 2, 1973, which indicates the nature and scope of career education for Minnesota as seen by that body.

A more finite objective in terms of the project itself was to develop and test the effectiveness of alternative career education models as they relate to meeting the needs of students enrolled in rural, urban, and metropolitan school systems.

Instructional objectives were formulated for each of the eight sites involved in the project. Because the scope of grade level participation and the nature of activities varied from site to site, the objectives were written to reflect the program to be implemented there. The initial objectives for each of the sites are presented in Appendix B.

Because each of the project sites had slightly different goals, purposes, and objectives, it was necessary to translate the objectives into a common set of objectives for evaluative purposes. The objectives resulting from this are shown in a section of the report relating to process and product evaluation.

C. Description of the general project design and the procedures followed, including information on the student population, instructional staff, and the methods, materials, instruments, and techniques used.

This project involved eight school systems which were charged with the responsibility of developing and operating a comprehensive career education program designed to meet the specific needs of their students. While their programs differed with respect to operation and type of career education model represented, each program was working toward a common set of goals or objectives. Three of the project sites were located in the metropolitan area of St. Paul-Minneapolis (Roseville, Osseo, White Bear Lake) their sizes ranging in population from 3,000 to 34,000; three other school districts were located in the rural farming regions of southeastern Minnesota (Plainview, Owatonna, and Red Wing) which range in population from about 2,100 to 15,000; while the remaining two sites, Willmar (population - 14,000) and Cloquet (population - 9,000) were located respectively in the western and northern areas of Minnesota. Since the students in each of the school systems located at the sites were quite different with respect to available occupational models, ethnic and socio-economic backgrounds, investigating alternative models and methods of providing meaningful career education seemed appropriate.

Each of the communities was purposely selected for this project because (a) it represented a unique opportunity to develop and test the effectiveness of alternative career models, (b) each had made a commitment to develop a comprehensive career education program, and (c) each was geographically located to serve as a demonstration project which other school systems in the area could utilize in planning, developing, and implementing programs of their own.

During the year previous to receipt of the project grant award, each of the eight site school systems was engaged in many of the following types of activities: (a) developing and testing curriculum materials for career education; (b) conducting pre-service and in-service workshops for teachers and/or attending workshops offered by other educational institutions concerning career education; (c) developing public relations programs to encourage the cooperation of parents, business and industry in developing meaningful career education programs; (d) conducting community occupational surveys; and (e) visiting other career education projects, both in and out-of state.

Appendix C contains a map showing the geographic location of project sites, project titles at each site, school districts involved, and a description of the grade level involvement and focus of activities.

Administration of the Project

Each of the participating school systems was responsible for formulating a local plan for developing, implementing, and evaluating a career education program. Local project directors were drawn from all facets of education, i.e., administration, teaching, and counseling. The primary duties of the project director for each local system consisted of such activities as: (a) planning for and supervising the activities of the local project, (b) attending workshops dealing with numerous aspects of career education such as evaluation, dissemination, in-service training, (c) coordinating, administering, and monitoring the evaluation system components at the local level, (d) submitting progress reports to the State Coordinator and (e) serving as fiscal agent for the local project site.

The Division of Vocational-Technical Education, Minnesota Department of Education, administered the grant and was responsible for project fiscal procedures and for the supervision-consultation of the various project sites.

Communications between the state and local level, and among the sites themselves was facilitated through the use of regular bi-monthly meetings of local project directors, state staff, and career education project directors from projects funded by other agencies and sources.

D. Results and Accomplishment of the Project.

Because of the emphasis placed on evaluation in this project, the results and accomplishments reported in this section will not touch greatly upon career education activities used by teachers or student outcomes, those matters will be discussed in detail in the section on process and product evaluation. The information contained herein will be more "descriptive" than "statistical" in nature. Subjective observations and reports are included in an effort to graphically portray the breadth and depth of the project.

It should be noted that the influence of the project extended beyond the eight sites involved, and that in turn the project was the recipient of benefits from outside sources. Whenever possible an effort was made to coordinate and cooperate with career education projects in Minnesota funded from other sources so that maximum benefits accrued to all.

1. Career education experiences were engaged in by approximately 570 teachers at the eight project sites, with approximately 20,000 students exposed to career education activities.

2. The greatest amount of activity occurred at the elementary level with decreasing amounts at the junior and senior high school levels.

3. A "snow ball" effect was evident throughout the project in that activity generated interest which resulted in additional activity, thus expanding both numbers of teachers and grade levels involved.

4. Extensive in-service training was conducted at the project sites through the duration of the project. This was in the form of college extension classes, on-campus classes, and in-school district workshops.

5. Project personnel (administrators, teachers, and counselors) served as resource persons and conducted workshops for other school districts wanting orientation to and in-service training in the career education concepts.

6. Career resource centers/laboratories were set up at several of the sites to provide information and assistance to junior and senior high school students.

7. Curriculum development activities were conducted at all of the sites. Career resource guides, subject matter materials, curriculum guides, displays, A-V materials, games and numberous other items were developed. A career education elementary curriculum guide from one site was selected by personnel from the Division of Instruction, Minnesota Department of Education, for reproduction and dissemination to every elementary school in the state.

8. Performance contracting proved to be a feasible means of encouraging teacher participation at the secondary level.

9. Multi-media presentations developed at two of the project sites were in constant demand in orientation/in-service training programs and community meetings throughout the state.

10. A pilot project-regional workshop providing orientation and in-service training to elementary administrators and teachers was conducted at one of the project sites. One hundred sixty-five persons from 65 schools, representing 43 school districts were in attendance at the workshop. The workshop used project personnel in teaching other teachers about concepts of career education. Funding for the workshop was drawn from an outside source.

11. Project personnel conducted a mini-course on career education at the Innovations Fair sponsored by Title III, ESEA.

12. Bi-monthly meetings of exemplary career education project directors were held. These meetings served to facilitate communications, dissemination, coordination, cooperation, and in-service training functions. Career education project directors from other programs participated in these meetings as well as state staff from other Divisions in the Department of Education.

13. Project personnel cooperated with other funding sources (Title III, ESEA; Council on Quality Education) in the proposal development-review process as concerned career education project proposals.

14. A functional process and product evaluation system were developed and implemented. Financial assistance was provided by Title III, ESEA, for development of the process evaluation instrument.

15. A workshop was conducted for test administrators pertaining to the instrument to be used and process to be followed in conducting the product evaluation. Substitute teachers from each of the project sites were used as test administrators.

E. Evaluation of the Project

Because of the need for information for decision making attached to this project, special emphasis was given to the evaluation component. While separate sections have been written concerning the evaluations conducted, a brief overview will be presented here.

Three subsystems comprised the evaluation component, (1) a third party evaluation, (2) a process evaluation, and (3) a product evaluation. An outside agency was contracted with to conduct the third party evaluation, as per the regulations of the grant award. This agency conducted on-site visits, filed required reports, attended project directors meeting, monitored the process and product evaluation subsystems development, and provided feedback to personnel having responsibilities for selected activities.

The Minnesota Research Coordinating Unit for Vocational Education (RCU) was responsible for planning, developing, testing, modifying, implementing, and operating the process and product evaluation subsystems. The RCU provided relevant feedback and data to local project directors, the third party evaluators, and the state coordinator. Detailed reports concerning the evaluation subsystems will be found in separate sections of this report.

F. Conclusions, Implications, and Recommendations for the Future.

The Research and Development Project in Career Education funded from Public Law 90-576, Title 1, Part C, Sec. 131 (a) was operational from March 15, 1972, through September 14, 1973. During that period of time the project was conducted at eight sites in Minnesota with approximately 570 teachers and 20,000 students in grades 1-12 participating. A major purpose in conducting the project at eight different sites was to test alternative models of career education developed to meet the needs of students, thus providing substantive information for decision making purposes.

The general conclusions presented herein relate primarily to process variables and as such are descriptive in nature, reflecting observation, feedback, and subjective opinion from many sources. Conclusions related to product outcomes will be found in the evaluation section of this report.

(1) Administrative support at all levels is vital to the successful development and implementation of a career education program. While career education activities are carried out in classrooms and laboratories and require the cooperation and support of teachers, it is extremely difficult to initiate activities without the endorsement of administrators whose units are involved.

(2) Concurrently, it is unlikely that career education can be incorporated into the educational mainstream at the local school district level as a mandate from the administration. Teachers need to be involved in all phases of planning, development, implementation, and evaluation as concerns the career education program in order for the concept to become a viable part of the curriculum.

(3) A key person in the successful planning, development, and implementation of a career education project is the project director. This individual must be provided with the responsibility, authority, time, and resources needed to accomplish the task.

(4) The in-service training is a critical factor in developing and implementing a career education program. The use of teachers involved in ongoing career education projects as teacher training instructors has proven to be an effective technique in conducting teacher training.

(5) Time for the development of curriculum/instructional materials must be arranged for teachers. This task is too time consuming for it to be accomplished as an "add on" to the regular load. Summer writing teams and/or performance contracting are methods which have resulted in positive outcomes.

(6) Evaluation needs to be addressed in a formal manner in planning career education projects. Outcomes need to be stated in performance (behavioral) terms, resources must be allocated for establishing and operating an evaluation system, and feedback must be provided on a systematic basis to all participants responsible for project operation/outcomes.

Other recommendations or suggestions for the future having implications for this and other projects of a like nature are as follows:

1. The introduction of any new component of the project must be preceded by an orientation or briefing session for all level of personnel involved. An understanding of the place and purpose of the component is essential to all who will come in contact with it. While this can become time consuming and costly, there is no known means to circumvent this step if desired outcomes are to be achieved.

2. Likewise, a planned ongoing public relations program informing the community at large, as well as school personnel about activities, events, and goals, can do much to elicit interest in and support for a career education program.

3. The introduction and inclusion of career education into the mainstream of education at the local school district level may be accomplished by starting with a nucleaus of interested/motivated teachers and administrators representing the various grade levels and proceding from there. This procedure is especially pertinent where resources are extremely limited or apathy exists concerning career education.

4. The more precisely the desired outcomes of a career education program can be stated in behavioral or performance terms, the better the probability that a measureable change can be shown in accomplishing those outcomes. Students, teachers, directors, and administrators need to know in performance terms what it is they are attempting to accomplish.

5. A feasible method for disseminating tried and proven curriculum/instructional materials, methods, ideas, and experiences related to career education needs to be developed.

APPENDIX A

POSITION PAPER ON CAREER EDUCATION

POSITION PAPER ON CAREER EDUCATION

Adopted by the State Board of Education on May 2, 1972.

Introduction

Whereas career education is often provided in Minnesota's public schools as separate unrelated activities at several grade levels and in a number of subject matter areas, and

Whereas there appear to be no common definitions for career education,

Therefore, this position paper has been adopted to provide common definitions to stimulate the coordination of existing efforts and to provide a framework for new activities.

Definition

Career education is an integral part of education. It provides purposefully planned and meaningfully taught experiences, for all persons, which contribute to self-development as it relates to various career patterns. Career education takes place at the pre-school and elementary, junior high and senior high, post-secondary, and adult levels of education. Emphasis is placed on career awareness, orientation and exploration of the world of work, decision making relative to additional education, preparation for career proficiency and/or specialized occupations, and understanding the interrelationships between a career and one's life style.

Career Education Goals for Students

The educational process should include utilization of occupational resources at all levels in all careers to help the student reach educational goals.

PRE-SCHOOL AND ELEMENTARY EDUCATION

Career education is an integral part of elementary education. Basic skills taught in the elementary curriculum are essential to career and life fulfillment. Instructional goals include having each individual:

1. Develop to the best of his/her ability basic skills in communication (oral and written); computations; problem solving and critical thinking.
2. Develop a sense of self-worth and self-realization.
3. Develop self-confidence in identifying and attaining goals.
4. Begin to identify individual interests and abilities.

The following are specific career awareness goals:

5. Develop an awareness of the many occupational careers available in our society and their dependent and interdependent relationships.

6. Recognize that the career role of each individual provides an important contribution to our society.

JUNIOR HIGH

-Develop a positive attitude toward self through an awareness of developing talent, values, and interests as they relate to career goals.

-Explore opportunities in the full range of career choices and the competencies required.

-Develop ability to plan for meeting individual career goals.

SENIOR HIGH

-Explore occupational opportunities in one or several careers and entry-level competencies required.

-Attain competencies necessary for entry into an occupation and/or for specialized education at the post-secondary level.

-Relate career choice to a life style based on interests, abilities, needs, and values.

-Explore the relationship between all education and individual career goals.

POST-SECONDARY AND CONTINUING EDUCATION

-Prepare for entry-level and/or advanced-level employment.

-Upgrade for job stability or career advancement.

-Prepare for new or different opportunities appropriate for individual abilities and interests.

Policy on Career Education

The policy of the State Board of Education is that each school board in Minnesota shall work toward attainment of the goals for pre-school through grade 12. Area vocational-technical institutes shall work toward post-secondary goals and take leadership in meeting continuing education goals.

Implementation

Each State Department of Education staff member shall assist in implementing and evaluating career education programs, and the assistant commissioners shall divide the responsibilities in such a manner as to accomplish the above goals. Coordination responsibilities including the responsibility for an overall career education plan shall be assigned to a section or unit within the department. All local staff shall assist in implementing, evaluating, and operating career education programs.

APPENDIX B

GOALS AND/OR OBJECTIVES
LISTED BY EACH SITE AT THE ONSET OF THE PROJECT

Independent School District #94
Cloquet, Minnesota

I. To develop in teachers a more positive attitude in helping students develop an awareness of the world of work.

  A. To meet with each individual department explaining career development concepts, present goals, discuss implementation of program, and ask for ideas and suggestions.

  B. To have a career development in-service program (2½ hours) involving all teachers of the school district, January 12, 1972.

  C. To work with individual teachers on developing their particular career education - general education units.

  D. To bring in community resource persons who could give teachers information which would help them to be better vocational advisors to their students.

  E. To make teachers aware of materials available on career education and how they could be integrated into the existing curriculum.

II. To develop in the student (K-12) a more positive attitude of the importance of an individual's role in the broad spectrum of the work world and how it relates to the well-being of the community.

  A. To take students on field trips where they can talk with the workers on the job.
    1. Job opportunities.
    2. Advantages and disadvantages of the job.
    3. Job environmental conditions.
    4. Job requirements.

  B. To make available a list of business and industrial firms for onsight visitations to view and talk with workers.

  C. To supplement the learning of children in the fundamental skill areas including mathematics, language arts, science, and social studies.

D. To develop hands-on activities through learning units in the intermediate grades related to job clusters surrounding occupations.

E. To make available lists of parents of primary grade students willing to share information about their occupations with their child's primary grade classes.

F. To develop a central file of places to visit and make available to each primary teacher by December, 1971.

III. To develop in students a positive attitude towards the broad spectrum of the world of work.

A. To make accessible to teachers video-tapes or films of visits to places which for reasons of safety or inconvenience do not allow large groups of children.

B. To develop an all-junior high career day for the purpose of having community and area resource people in to talk with the students.
1. Departmental career day.
2. Grade level career day.
3. All-school career day.

C. To allow students to explore for themselves occupations and occupational clusters.

D. To give the students guidance that will help them see "themselves" in preparing for their role in the world of work.

IV. To develop in students (7-12) an awareness of the possibilities and requirements in making career decisions.

A. To provide guidance information for students giving them the opportunity to become orientated with career education materials, resource personnel, and services available.
1. Occupational information center.
2. Counseling services.
3. Community resource people available.

B. To institute a testing program for all students helping them to better understand their interests, abilities, values, and other self-characteristics.

1. Scamin test.
2. Kuder.

C. To produce occupational information across a wide range of job clusters for all junior high students.

D. To provide the students with the necessary services and materials needed for job orientation and job exploration grades 7 - 12.

E. To provide for students 10 - 12 an exploratory work experience education program for on-the-job observation in different occupations.

V. To provide the students with the opportunity to evolve their own value system focusing on the career development theme through interdisciplinary projects.

A. Social Studies - Home Economics - You the consumer.
B. Science "Ecology."
C. Social Studies - "Challenge."
D. English - Business Education.

Independent School District #279
Osseo, Minnesota

I. To develop a teaching staff with a more positive attitude toward Career Education and the capability of shaping career oriented behaviors in students.

1. In-service classes through University of Minnesota.
2. Media presentation on implementation.
3. Resource guide, speakers, and field trips.

II. To outline major career education objectives K-12.

1. Develop objectives in career education K-3, 4-6, 7-9, and 10-12.
2. Develop a model for implementing in our district.

III. To develop a set of teaching materials consistent with the K-12 objectives that will help teachers to integrate career education activities into existing curricula.

1. Staff development of units using career education objectives.
2. Career resource room at the secondary level.
3. Development of "project" approach materials for career education.
4. Screen and recommend prepared media materials for purchase.
5. Produce local media materials that will help integrate curriculum materials.

IV. To develop in students K-12 a basic knowledge of career opportunities and more positive attitudes toward the value and necessity of work in our society.

1. Implementation of the developed curriculum career resource center.
2. Feedback from business and industry visitation by students to business.

V. To implement and revise our career education curriculum materials.

1. Select on a pilot basis, schools, grades, and/or departments to implement materials.

2. To gather base line data that will enable us to evaluate and revise if necessary the materials being used.

VI. To improve communications and cooperation between the school and business, industry, community, and parents.

1. To develop at least two newsletters for district wide circulation.
2. Media presentations to civic organizations.
3. Report of progress to Board of Education.

Independent School District #761
Owatonna, Minnesota

I. To improve the attitude of educators toward career development.

   a. By providing in-service education through at least four tours, three outside speakers and eight discussion groups for all elementary teachers and administrators.

   b. By providing an atmosphere for free discussion between educators and employer-employee concerning mutual problems and concerns during the in-service tours, and the discussions following the tours.

   c. By inviting young people, maybe former students, employed and unemployed, to meet in small group discussions with teachers.

   d. By creating an educational environment which will motivate teachers to develop and use career awareness materials in their classrooms.

II. To improve the attitude of the community and parents toward a career awareness program.

   a. By involving 25 or more businesses in an in-service training program for educators, class field trips, and business resource people.

   b. By making provisions for teachers involved in the program to speak to civic groups, PTA, and other community groups, to inform the community and make them aware of the importance of career awareness in grades K - 6.

   c. By publication of activities carried out locally in the newspaper and on the local radio station.

   d. Develop and distribute community wide 3000 or more brochures describing the Owatonna Career Awareness Program.

III. To modify the elementary school curriculum so it will include career awareness materials for grades K - 6 in all Owatonna elementary schools, public and private.

a. By developing seven grade level collections of career awareness materials based on field trips, tours, resource people, printed materials, games, teacher-business discussion groups, or purchase of materials developed by others.

IV. To develop within students an attitude of respectability for work in all types of jobs.

a. By showing a factual overview of as many occupations as possible which are included in the 15 occupational clusters as defined by the United States Office of Education at some time during a students K - 6 grade year.

b. By modifying teacher value judgements on any occupation so as to not yield a negative image to any job.

Independent School District #810
Plainview, Minnesota
and
Winona Area Vocational Technical Institute
Winona, Minnesota

I. To develop an improved understanding and attitude on the part of parents, teachers, and community concerning their role in the career development process.

II. To help all students gain a better understanding of their own goals, interests, and abilities relevant to occupations.

III. To help young people make realistic career choices in light of their special interests, aptitudes, and potentialities.

IV. To help students learn how to conduct a thorough investigation of occupational fields.

V. To develop in students, parents, and teachers an improved understanding for the value, dignity, and discipline of work in an occupation.

Independent School District #256
Red Wing, Minnesota

I. To broaden each student's knowledge of occupations, beginning at the primary level and continuing sequentially through high school.

   A. By identifying individual abilities, interests and aptitudes, and using them to aid the student in selecting a suitable program of study.

   B. By adapting curriculum areas to include career development studies.

   C. By stressing proper work attitudes in occupational roles.

   D. By providing instructional materials centers to include a "Job Exploration Center" and occupational research materials for student use.

   E. By exploring all avenues of further education.

II. To provide curriculum and program which are directly related to the World of Work.

   A. By providing expanded work experiences: as planned by the vocational rehabilitation coordinator through the cooperative programs such as trade and industry, office education, distributive education, and within the special education classes.

   B. By using simulated work roles to enrich occupational exploration.

   C. By incorporating field trips with a purpose, and initiating follow-up studies related to occupations.

   D. By giving each student exposure to a minimum of at least one job related resource person during the school year.

   E. By offering senior high students an expanded choice of vocational subjects.

   F. By assessing special needs of exceptional children to adapt a curriculum useful to them.

G. By orientating students regarding special occupational characteristics of layoffs, joblessness, terminations, recycling, retraining and continuing education to meet upgraded job standards.

III. To involve the community as a part of the total career development program.

A. By using community advisory councils to gather information and reports from the business and industrial community.

B. By compiling a comprehensive community resource guide.

C. By seeking work experiences in the community for "hands on" knowledge of occupations.

D. By planning field trips for direct contact with many jobs.

E. By using community resource personnel to bring job knowledge into the classroom.

F. By establishing closer contact between parents and the school by calling upon them as resource persons.

G. By seeking news media coverage to keep the community informed about the school career development program.

IV. To increase teacher's knowledge of occupations, educational opportunities for youth, and of techniques for implementing career development.

A. By conducting in-service training programs to aid teachers by supplying ideas, examining materials and techniques for career development.

B. By examining new materials and evaluating them for use in the classroom.

C. By providing teachers with information regarding occupations and educational facilities.

Independent School District #623
Roseville, Minnesota

I. To give students an opportunity to acquire respect for workers and the place of work in our society.

   A. Is aware of the meaning of work of significant persons in their lives.

      1. A student becomes aware of the range and scope of occupations.
      2. The student identifies the values placed on work and achievement of significant persons in their lives.

   B. Identifies the contributions of a wide range of workers to the well being of society.

      1. The student becomes aware of the interrelatedness of occupations and their dependency on each other.
      2. The student understands the need for specialization and diversity of occupational roles of individuals.
      3. Is able to understand the important and changing contribution of women to the world of work.

   C. Understands how work can help ameliorate social problems.

      1. The student understands being unable to work has negative effects on the whole community and society.
      2. The student understands why meaningful work gives an individual a feeling of worth and gives him pride in himself.
      3. The student becomes aware of those occupations which help to change and improve society.

II. To develop a positive attitude toward self through an awareness of his developing values, talents, and interests as they relate to work roles.

   A. Is able to perceive and describe himself as having both similarities to and differences from those around about him.

      1. The student is able to describe specific physical and psychological traits of himself as compared to those of others.

2. The student is able to use his awareness of individual differences to enable him to work well with others.

B. Is aware of how his work may be affected by his abilities, interests, physical characteristics, and health.

1. The student is able to use his knowledge of personality traits to discover how they relate to occupations.
2. The student is aware that his personality is constantly changing and will, therefore, influence his career development.

C. Is able to perceive and describe qualities which set him apart as a unique individual and how these qualities affect work roles.

1. The student is able to realize how occupations would provide him with an opportunity to express his personality (creativity, needs, talents).
2. The student is able to identify personality traits which are appropriate for workers in specific occupations.

III. To make the student aware of the advantages and disadvantages inherent in various careers.

A. Identifies and explores broad occupational clusters.

1. The student is able to associate jobs with the proper occupational cluster.
2. The student is able to see a commonness of elements in jobs that form clusters.

B. Is aware of the values placed upon various occupations in our society.

1. The student understands that different individual values can be realized through differing occupations.
2. The student understands that in our complex society, all occupations contribute to the society though the rewards may vary.

C. Studies workers in various occupations to become aware of economic, social, physical, and health implications associated with various occupations.

1. The student becomes aware that different occupations require differing physical, social and mental attributes.
2. The student becomes aware that different occupations have varying potential for individual growth and change relative to his life style.
3. Becomes aware that both worker and job requirements are constantly changing and that change in the future may be accelerated.

IV. To develop decision-making skills and an awareness of the results of actions and decisions which give him a sense of destiny control.

A. The student can describe the natural consequences of his actions.

1. The student realizes that every action has a consequence whether positive or negative.
2. The student develops a process of making decisions in which a student will weigh the possible consequences of an action.

B. Be able to describe how his life's work provides opportunities for changing his status and environment.

1. The student realizes that various jobs have differing capacities to meet an individual need.
2. The student realizes that changes in status and environment can occur within an individual's career.
3. The student realizes that unanticipated events (economic, social, health, etc.) may influence career decisions and plans.

C. To realize an occupation is one of the ways an individual can achieve self-fulfillment.

1. The student realizes the individual's career needs for self-fulfillment vary.
2. The student understands the ways in which self-fulfillment needs may be satisfied by jobs.

D. Exhibits planfulness in the way he manages his resources to achieve individual goals.

1. The student realizes to what degree he can utilize resources to achieve more time for individual pursuits.

2. The student determines his individual goals and plans the best use of his resources.
3. The student understands the sequential nature of decisions in his career plans.

V. To develop interpersonal skills required in work roles.

A. Can identify the talents of an individual in a work group which allows that individual to function as a contributing member.

1. The student will utilize necessary skills to become a contributing member of the work group.
2. The student can apply his talents and skills in work situations.

B. Understands that most job roles involve teamwork and a willingness to cooperate and to get along with others.

1. The student becomes aware that each person in an interpersonal situation must satisfy his job role in order that the group might function.
2. The student becomes aware that the nature of work demands that each worker give up some individuality.
3. The student becomes aware that certain jobs provide a greater opportunity for individual expression.

C. Shows concern for fellow workers and shares in the success or failure of the group work project.

1. The student is able to put group work goals primary to individual goals.
2. The student becomes aware that in the world of work group success or failure is dependent upon the cumulative effort of the group.

Independent School District #347
Willmar, Minnesota in conjuction with the
Willmar Area Vocational-Technical Institute

I. Curriculum Task Force

A. To correlate and record the community resources into the existing curriculum where they are most useful.

1. The Curriculum Task Force shall develop a Resource Guide and assemble it in booklet form.

II. Teacher Training

A. A training program emphasizing career development will be developed for teachers K - 12.

1. A training program for lay people emphasizing presentation of materials will be developed.

III. Community Resource Assessment

A. A Community Resource Task Force will develop a list of businesses, industries and service agencies to be interviewed in regard to sharing information about their professions with school students.

1. Members of the task force will interview members of businesses, industries, and service agencies.
2. The Community Resource Task Force shall classify all community resources by occupation.
3. The task force shall assemble a booklet of community resources available to the public schools.

Independent School District #624
White Bear Lake, Minnesota

I. Record, evaluate, and gather data related to what we are presently doing in all subject areas for career development.

II. Implement existing curriculum and material gathered from throughout the country into as many subject areas of the curriculum as possible on an experimental basis.

III. Provide materials, commity resources, and related audio-visual aids necessary to implement career development units.

IV. Provide an exposure to a number of occupation-related speakers, student visits, and limited exploratory on-the-job experiences.

V. Provide in-service training for our staff outside of school hours.

VI. Develop a comprehensive community occupational speaker resource list utilizing tab equipment and school census.

VII. Develop a limited on-the-job experience program for selected students.

VIII. Utilize community business and industry for observation and visit by both students and teachers.

IX. Utilize a steering committee representing students, educators, and community in all phases of the project.

X. Evaluate the program based on performance objectives to be developed in the early stages of the project in addition to evaluation based on selected base-line data information.

XI. As a result of this project, the students participating will begin to have:(1)

(1) The Career Development Program, Tennyson and Florence Hanson, University of Minnesota, October, 1970.

1. A clarification of self-concept related to occupations and work.

2. The ability to assume responsibility for vocational planning.

3. The ability to identify their personal needs and sources of satisfaction which should be considered in planning a career.

4. A knowledge of occupations and work situations.

5. A knowledge of vocational education and resources.

6. An awareness of the decision making process.

7. A sense of independence.

XII. Cooperating teachers will:

1. Integrate career concepts into existing curriculum.

2. Cooperate with and utilize community resources.

3. Provide leadership in developing the career concept with other members of the staff.

4. Work cooperatively with the guidance staff in the development and use of career educational materials and concepts.

5. Continue to develop the career concept in their curriculum.

XIII. The participating community resources will;

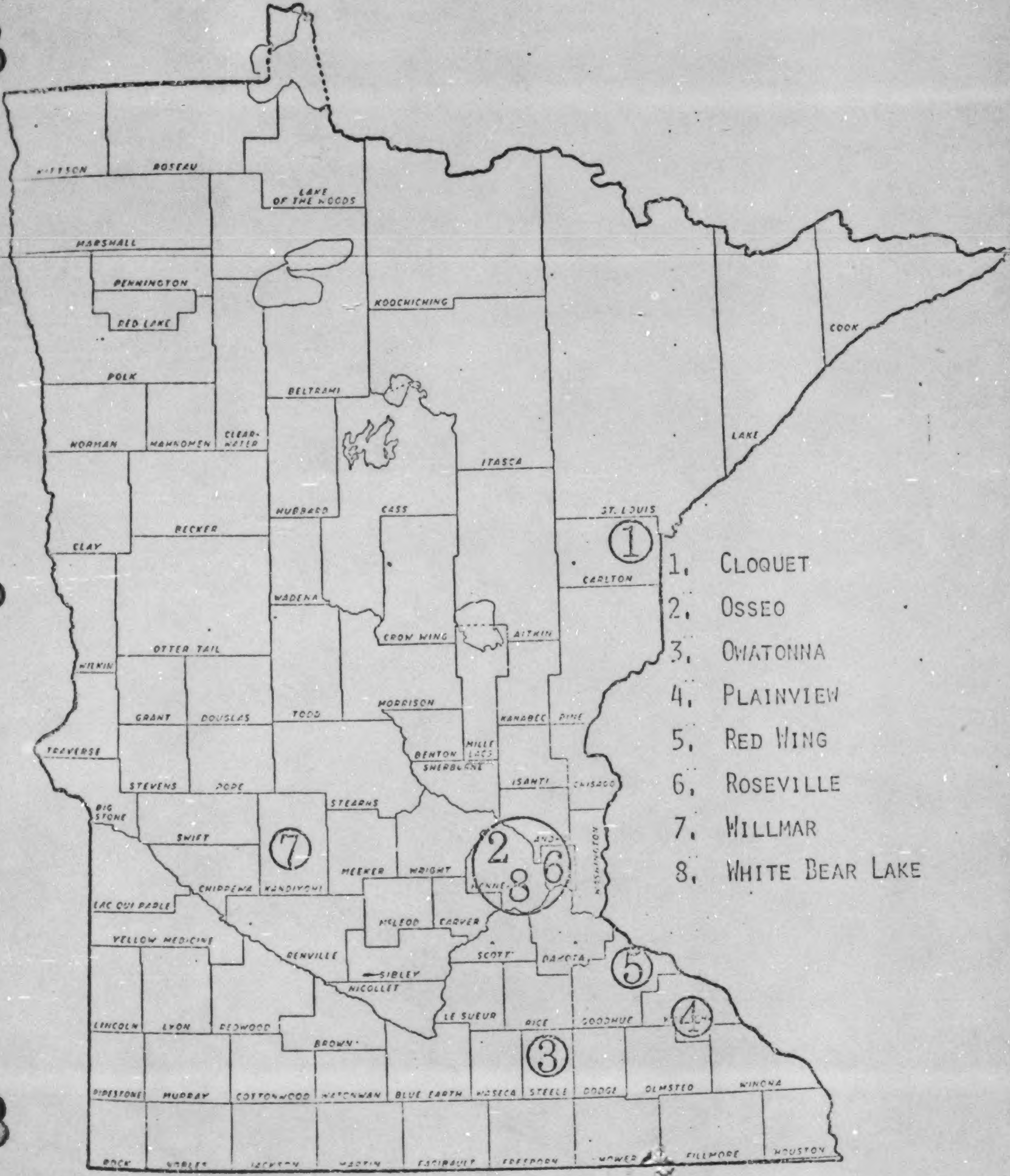
1. Become more involved in providing speakers, work laboratories, and the in-servicing of teachers through faculty visitations.

2. Play more of a role in assuming responsibilities for related career exploration of students not possible in the school setting.

APPENDIX C

PROJECT SITE LOCATIONS, TITLES, SCHOOL DISTRICTS, AND DESCRIPTIONS

PART C PROJECT SITES


KITTSON
ROSEAU
LAKE OF THE WOODS
MARSHALL
PENNINGTON
RED LAKE
KOOCHICHING
COOK
POLK
BELTRAMI
NORMAN
MAHNOMEN
CLEAR-WATER
LAKE
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ST. LOUIS
HUBBARD
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WADENA
CROW WING
AITKIN
OTTER TAIL
WILKIN
GRANT
DOUGLAS
TODD
MORRISON
KANABEC
PINE
MILLE LACS
BENTON
TRAVERSE
SHERBURNE
STEVENS
POPE
ISANTI
CHISAGO
STEARNS
BIG STONE
SWIFT
7
WASHINGTON
2
8
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MEEKER
WRIGHT
CHIPPEWA
KANDIYOHI
LAC QUI PARLE
MCLEOD
CARVER
YELLOW MEDICINE
RENVILLE
SCOTT
DAKOTA
5
SIBLEY
NICOLLET
LE SUEUR
RICE
GOODHUE
4
LINCOLN
LYON
REDWOOD
BROWN
3
PIPESTONE
MURRAY
COTTONWOOD
WATONWAN
BLUE EARTH
WASECA
STEELE
DODGE
OLMSTED
WINONA
ROCK
NOBLES
JACKSON
MARTIN
FARIBAULT
FREEBORN
MOWER
FILLMORE
HOUSTON

1. CLOQUET
2. OSSEO
3. OWATONNA
4. PLAINVIEW
5. RED WING
6. ROSEVILLE
7. WILLMAR
8. WHITE BEAR LAKE

MINNESOTA

EXEMPLARY PROJECTS IN CAREER EDUCATION

Funded Under Section 131(a) of Part C of the
Vocational Education Amendments of 1968
(Public Law 90-576), for FY 1973

PROJECT TITLE	SPONSORING SCHOOL(S)	DESCRIPTION OF LOCAL PROJECTS
A comprehensive Exemplary Program "Orientation to the World of Work" (Career Development K-12)	Independent School District #94 Cloquet, Minnesota	A comprehensive career education program has been developed and implemented at Cloquet with the assistance of community resource people. It is aimed at providing all students throughout their entire educational experience (K-12) a series of related, comprehensive, systematically planned career educational activities. Emphasis on self-concept and attitude development of the student will continue at the elementary level, with an interdisciplinary approach and exploratory work experience programs utilized at the junior and senior high school levels, respectively. Performance contracting has been used as one means of developing and testing curriculum materials and encouraging staff involvement in the project.
Project TACO: Technology Assisted Career Orientation	Independent School District #279 Osseo, Minnesota	Three goals, summarized as Awareness, Appreciation and Attitude, and Decision Making, form the basis for a comprehensive career education project for one of the smaller suburban school systems in the metropolitan area. The project is being conducted on a pilot basis in the district with four elementary schools, three junior high schools, and the counseling and guidance departments in the

PROJECT TITLE	SPONSORING SCHOOL(S)	DESCRIPTION OF LOCAL PROJECTS
Project TACO: Continued		senior high schools involved. Objectives have been developed and activities initiated which consider the needs of students, teachers, and the community.
Career Awareness Education	Independent School District #761 Owatonna, Minnesota	The career education project at Owatonna includes staff and students from both public and parochial elementary schools. All students and staff at this level are currently involved. Considerable effort has gone into the development of curriculum materials with a view to integrating career information into the ongoing curriculum. The goals of this project are: (1) to modify the attitudes of educators toward career development, (2) to change the attitude of the community toward a career awareness program, (3) to integrate career awareness materials into the elementary curriculum, and (4) to develop in students a positive attitude for all types of jobs.
Students, Parents, and Teachers Explore the World of Work in Southeastern Minnesota	Independent School District #810, Plainview, Minnesota and Winona AVTI Winona, Minnesota	Plainview has used a two phase procedure in implementing career education in its school system. The project started in its initial phase at the elementary level, K-6, with an upward progression into grades 7-9 in the succeeding phase. All learning experiences at both levels are integrated into the existing curriculum. Games, demonstrations, skits, role playing

PROJECT TITLE	SPONSORING SCHOOL(S)	DESCRIPTION OF LOCAL PROJECTS
Students, Parents and Teachers Explore the World of Work in Southeastern Minnesota continued		and audio-visual materials are used in the classroom in teaching about the World of Work, while field trips, resource people and individual and group projects are modes of instruction used outside the classroom. In addition to learning about the World of Work, emphasis will be given to teaching students about hobbies and leisure time activities.
Career Oriented Education in the Red Wing Public School	Independent School District #256 Red Wing, Minnesota	The Red Wing project was designed to culminate in an articulated, comprehensive (k-12) career education program to be conducted in six elementary schools, a junior high school and a senior high school. Principals of the elementary schools will aid in orientation of teachers in World of Work concepts. Each building principal will aid teachers in planning, promoting, and establishing career education projects within the classrooms, building, and the community. At the elementary level there is a strong emphasis for parents to be called upon to serve as resource persons. Exploratory experiences at the junior high school have been included as specific units and projects within subject matter classes. These will be expanded during the year with increasing activity from the various departments. Likewise, at the senior high school level projects have been initiated in various subject matter fields. In addition provisions for work experience and student job placement services are being developed.

PROJECT TITLE	SPONSORING SCHOOL(S)	DESCRIPTION OF LOCAL PROJECTS
A Developmental Career Development Elementary Program for Independent School District #623	Independent School District #623, Roseville, Minnesota	The career education project at Roseville is focusing on the elementary level, K-6. Its purpose is to develop and test effective methods for teaching occupational awareness in the context of a large urban elementary school system. As such, the project has expanded horizontally from its pilot phase to include numerous schools, teachers, students, and counselors at the elementary level. Considerable emphasis has been given, at this site, to the evaluation component of the project.
The Relevance of Community Resources Toward the Development of Understanding Occupational Opportunities and the Significance of the World of Work in the Willmar Public School	Independent School District #347 Willmar, Minnesota Willmar Area Vocational-Technical Institute	The development of an articulated comprehensive career education program for a predominantly rural community represents the thrust of the project at Willmar. The project has progressed through a series of phases, involving the elementary, junior, and senior high schools. Major emphasis has been placed upon identifying and using community resources in the instructional process. Most of the project focus will be accomplished through the existing curriculum as correlated to the identified resources of the community. Separate career guidance activities are also an integral part of the project.

PROJECT TITLE	SPONSORING SCHOOL(S)	DESCRIPTION OF LOCAL PROJECTS
A Career Development Program, Grades 7-9, for Independent School District #624	Independent School District #624 White Bear Lake, Minnesota	White Bear Lake is a recent addition to the career education exemplary project, having been chosen as a replacement site for another suburban school. The focus at this site will be on the junior high school level (7-9) with two public schools and one parochial school involved. The project will utilize performance contracting and begin with "already developed" curriculum materials procured from throughout the nation.

APPENDIX D

TITLES ILLUSTRATIVE OF CURRICULUM - INSTRUCTIONAL MATERIALS DEVELOPED AT EACH SITE

Cloquet

The Garfield Gazette - A Magazine by Garfield Kids.
Career Development Units for Practical Math Students in Grades 10-11-12.
Career Development Curriculum Project - Slide Series - Office Procedures and Bookkeeping Classes.
Studying Spaceship Earth - Summer School Course.
Elementary Career Development - Parent Visitation Programs by Video-taping.

Osseo

Directory of Resources.
District No. 279 Educator, Special Edition, Career Orientation Program.
Curriculum - Instruction Materials
  Genetics
  Applied Physics
  Astronomy
  English Curriculum
A Newspaper Unit Utilizing Career Education - Fourth Grade Language Arts.
A Political Science and U. S. Government Unit Utilizing Career Education - Fourth Grade Social Studies.
An Insect Unit Utilizing Career Education - Fourth Grade Science.
Woodworking Unit - Grades 4-6.
Using Media - A Curriculum Model for Integrating Career Awareness and Subject Matter.

Owatonna

Owatonna Career Guide - Grades 1-6.
(This guide was selected for reproduction and distribution to all elementary schools in the state by the Pupil Personnel Services Section, Division of Instruction, Minnesota Department of Education.)

Plainview

Career Education Games - Plainview Elementary School.
Expanded Education, Phase II - World of Work, Plainview Jr. High.

Red Wing

Red Wing Community Resource Guide.
Red Wing Career Education - Instructional Materials Resource Guide.

Roseville

Roseville Area Schools - Career Development.
Roseville Area Schools Occupational Education - Career Development News Letter.
Career Development K-6 Resource Materials.
Roseville Area Schools Career Education Series.

White Bear Lake

Career Development Social Studies, Grade Nine.
Exploration of Careers in Community.
Development of Career Education Center.
By the Sweat of Your Brow.
Occupational Computer System Adapted for Science.
SWAP Study Work Advisor Program Handbook for the Project Director, Sponsor, Employer, Parent or Guardian.
Career Education Resource Center.
SWAP Study Work Advisor Program Handbook for the Junior High Student.
Community based Speaker's Program.
MAC - Music and Careers.

Willmar

A Curriculum Guide to the World of Work Occupational Survey.
Willmar's World of Work Project, Dissemination, Explanation and Examples.

OFFICE COPY - DO NOT REMOVE

FINAL EVALUATION REPORT

CAREER EDUCATION MODEL

UTILIZED BY THE MINNESOTA STATE
DIVISION OF VOCATIONAL-TECHNICAL
EDUCATION

SEPTEMBER, 1973

EDUCATIONAL MANAGEMENT SERVICES, INC.
4930 West 77th Street Minneapolis, Minnesota 55435 (612)920-3632

FINAL EVALUATION REPORT

OF

THE CAREER EDUCATION MODEL UTILIZED BY THE MINNESOTA STATE DIVISION OF VOCATIONAL-TECHNICAL EDUCATION

Submitted to:

Minnesota State Department of Education
Division of Vocational Technical Education
Program Planning and Development Section

September, 1973

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Part C, Sec. 131(a)

Educational Management Services, Inc.
4510 West 77th Street
Minneapolis, Minnesota 55435

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Red Wing. . . . . Peter Martins
Roseville . . . . Vernon Vick
White Bear Lake . Ron Johnstone
Willmar . . . . . Donald Kellen

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Educational Management Services, Inc.

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SECTION I. INTRODUCTION AND METHODOLOGY

The major goal of this study was to research and evaluate the feasibility of the career education model being employed by the Minnesota State Department of Education, Division of Vocational-Technical Education. This final report is one of two reports which were prepared as a third-party evaluation of the project. The specific objectives of the overall study were:

A. To evaluate the effectiveness of both the project's administration and the career education program as it is operated in the schools;

B. To identify the products and processes of the eight sites which may be transportable to the other LEA's within the state of Minnesota and/or the nation;

C. To project the cost-benefit relationships of transportable elements, both those elements unique to the individual sites and those elements common to the entire model;

D. To develop descriptive profiles of the students served by each of the eight sites, including number in each project, grade level and other demographic and educational characteristics which might enhance understanding of the transportable elements:

E. To determine the disadvantages and advantages of an eight-site model to a one-site model. Since the model utilized by the state has eight sites, this objective will focus mainly upon the feasibility and efficiency of this eight-site operation. Under these conditions, it will be impossible to make a direct comparison of an eight-site model versus a one-site model.

F. To conduct an auditing process of the involvement of the RCU with the models.

This final report also includes data and observations presented in the interim report of May 1973.

1.1 Philosophy

Methodology of evaluation is directly dependent upon philosophy. To better understand this evaluation effort one should understand its philosophical base. EMS's philosophy as it relates to Career Education is given the following concept statement:

> Career education, according to the various discussions and position papers represents a comprehensive refocusing of the entire educational process in the hope of improving a variety of societal, economic and personal outcomes. This refocusing of educational processes is a shift from the vicarious "teaching about" conducted within the typical classroom situation to an experiential fusion with, and linkage between, the academic, vocational, and avocational, worlds. It is anticipated that, beyond the teaching of basic skills at the elementary school level, additional formal instruction will become more responsive to the individual's self perceived areas of weakness as he interacts with the broad society and will be relevant for the learner's total life experience. The counseling process is to serve as the point for coordinating these multiple activities and as an aid to the student in processing informational and experiential input.
>
> Despite - or perhaps because of - the all-encompassing nature of this concept, the exact dimensions for planning and implementation are presently in a continuing state of evolution. The broad aim of career education seems to be to increase the capacity for informed decision-makeup by every individual regarding his personal and career choices during the course of his entire life span. The justification for such an extensive re-tooling within many of our societal institutions, resides in the growing awareness that our current systems are failing an expanding proportion of the population. This failure is particularly evident for those who have previously had limited access to meaningful participation in decision-making within the system and those who have been channeled into an unrealistically narrow preparation for a specific vocation. Implicitly, this trend seeks to afford the individual a heightened

recognition of his own skills and talents, and of unexplored options relating to career choices. Attainment of these subsidiary goals is a necessary corollary to the realization of true equal employment opportunity. Nevertheless, career education must incorporate the college-bound student, as well as those now enrolled within the general education and commercial tracks at the secondary level, in order to avoid stigmatizing the program as a new means of shunting aside the expendable segments of society.

One desired result of implementing a career education program would be to install greater continuity between the roles prescribed for the children and adults within our technologically sophisticated society, easing the transition from the somewhat passive, dependent status assigned to childhood and the abruptly disjunctive expectations held for adults to be independent and self-sufficient. Since career education has ramifications upon the entire community structure, it would appear essential to initiate some formal method for incorporating and benefiting from community opinions and feedback.

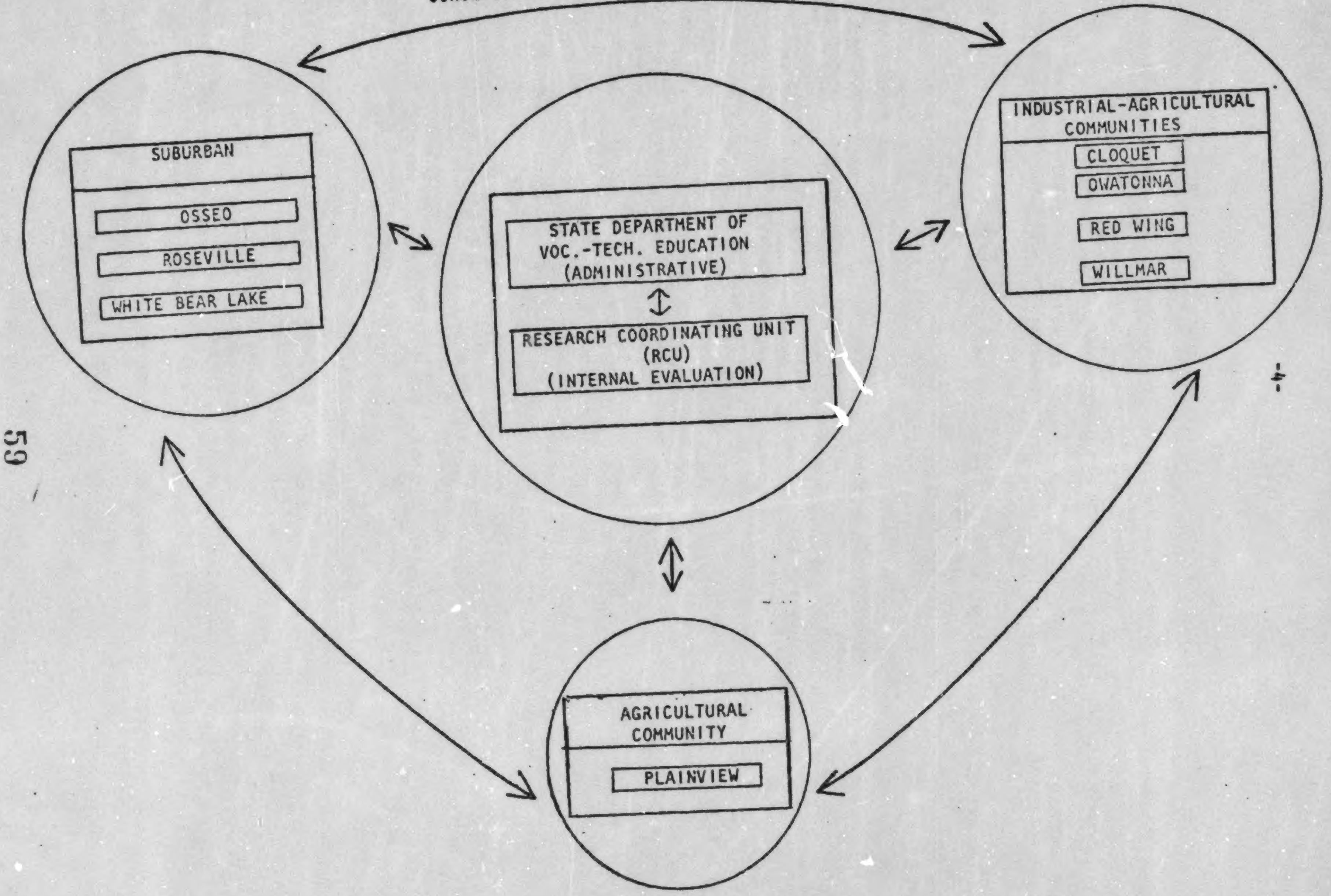
1.2 Conceptualization of the Minnesota Model

The Minnesota State Department of Vocational-Technical Education has funded eight exemplary career education projects throughout the state of Minnesota. With one exception, all projects have been active since the beginning of the 1971-72 school year. The conceptualization of the Minnesota model is presented in Figure 1.1. At the center of the model is the State Department, Division of Vocational-Technical Education, (DVTE), which is responsible for the administration of the projects, and the Research Coordinating Unit of the University of Minnesota, which is responsible for the internal evaluation. These two agencies work very closely in relating to the eight delivery sites. The sites may be generally classified into the three following categories:

1.2.1 Suburban Communities: These communities are in close proximity to the Twin Cities Metropolitan area and may be thought of as "typical" metropolitan suburban areas. Included are the sites of Osseo, Roseville and White

FIGURE 1.1

CONCEPTUALIZATION OF MINNESOTA MODEL


SUBURBAN
OSSEO
ROSEVILLE
WHITE BEAR LAKE
STATE DEPARTMENT OF VOC.-TECH. EDUCATION (ADMINISTRATIVE)
RESEARCH COORDINATING UNIT (RCU) (INTERNAL EVALUATION)
INDUSTRIAL-AGRICULTURAL COMMUNITIES
CLOQUET
OWATONNA
RED WING
WILLMAR
AGRICULTURAL COMMUNITY
PLAINVIEW

Bear Lake. The school districts and the communities are the largest of the eight project sites. Each of the three districts have in excess of 10,000 students in grades K-12 with Osseo being the largest of the districts at about 14,000 students.

1.2.1 Industrial-Agricultural Communities: The communities which are termed Industrial-Agriculture are generally smaller than the suburban group, are located out-state, away from the general influence of the metropolitan area, have an economy based on self-contained industrial and service centers within the communities and are surrounded by agricultural areas which also contribute substantially to the community's economy. These communities are Cloquet, Owatonna, Red Wing and Willmar. The school districts of these communities range in size from about 3,500 to 4,500 students.

1.2.3 Agricultural Community: The third type of site included in the Minnesota model is characterized by being smaller in population than any of the other communities and has its economy primarily dependent upon the agricultural surrounding areas. The site characterizing this classification is located at Plainview, and that district has an enrollment of slightly over 1,000 students in grades K-12.

1.3 General Contextual Factors of the Communities

Each of the three types of communities, as well as the communities themselves, offers unique aspects to the development of a career education model. The first type of community, suburban, contains large school districts offering a greater variety of services to their students and, consequently, employing more specialists. The suburban sites would have immediate access to almost all of the occupations that are typically found in a large metropolitan area. They would not, however, have immediate access to some of the agricultural occupations which may be found in smaller communities.

The second group, the industrial-agricultural communities, would have immediate access to both industrial and agricultural employment (although not as extensive industrial diversity as the suburban projects) situations normally found in communities of medium size with self-sustaining industry surrounded by agriculture. Found here are many of the same kinds of industries as located in the metropolitan areas, although not as large and complex. A major influencing factor is agricultural, while there is a lessening of suburban and/or metropolitan influences.

The final community, Plainview, would have much of its immediate employment possibilities related to the agricultural environment surrounding the community. The immediate employment areas would differ significantly from that of the suburban communities. Likewise, levels of income and other social economic factors would differ from the patterns of the suburban or the industrial-agricultural communities.

These communities typify the general possibilities which might be found in a state such as Minnesota; namely, a large metropolitan area, an out-state area of smaller communities, but communities based both upon industrial and agricultural economies, and the rural communities based primarily upon an agricultural economy.

1.4 Process of Data Collection

To gather data for this report, several activities were undertaken. Two site visits were made to each of the project locations during which time evaluation personnel met with the superintendent or his representative, the project director, the principal and a minimum of eight teachers who had been selected at random. These visits were conducted midway and at the end of the 1972-73 school year.

Selected meetings of the State Department officials and project directors were attended by the evaluators to gain a perspective of the operational design and modifications of the eight sites. Additionally, the proposal submitted by each site was reviewed and critiqued in an effort to identify discrepancies between the design and its implementation. Meetings were also held with Dr. Brandon Smith of the Research Coordination Unit (RCU) at the University of Minnesota. These meetings focused primarily upon the efforts of the RCU in development and implementation of evaluation efforts. Reports, procedures and instrumentation generated by the RCU was reviewed.

1.5 Areas of Investigation

Evaluation of the "Minnesota Model" was undertaken by examining the process and products of the eight delivery sites, the RCU and the Division of Vocational-Technical Education (DVTE) in eight areas. These eight areas encompass the objectives of this study as well as the three main component parties. Each area should be applicable to each of the eight delivery sites but not necessarily applicable to the RCU and DVTE as their functions are more specialized. Emphasis among the areas also varied.

Figure 1.2 shows the conceptual design of this evaluation strategy and the responsibility of each component party. As stated above, the evaluation strategy was to investigate the activities of the three component parties, (LEA's, RCU, DVTE) in each of eight areas. These areas were:

1. Design - Initial project design, modifications to that design and the degree to which the design, original or modified was and is being followed and the procedures utilized by the DVTE in selection and monitoring of projects.

2. Context - The contextual environment of the model (the eight delivery sites, the RCU and the DVTE) and its relationship to that environment.
3. Management - Organizational structure, planning and implementation both at the state and local level.
4. Instruction - The plans and implementation strategies used in the delivery system of information to students as well as in-service and workshop activities for teachers.
5. Information - Dissemination of information and collection and monitoring of internal data.
6. Costs - Fiscal management systems and projected cost analysis.
7. Evaluation - Third party review of the internal evaluation of product and processes of the model.
8. Documentation and Transportability - Commitment of the model's processes and products to a form which can be historically preserved.

For each of these areas, each of the three component parties has certain responsibilities. The scale of responsibility that was perceived by the EMS evaluation team after observation and discussion with the parties is given in Figure 1.2. For example, the LEA's had major responsibility in developing a project design. These designs were then submitted to the DVTE, which reviewed and awarded funds. Generally the LEA's are perceived as having major responsibilities as it relates to six of the eight areas. On the other hand, the RCU assumed major responsibility for only one area, that of internal evaluation. Each of these areas will be discussed in detail in the next section.

Figure 1.2

CONCEPTUAL DESIGN OF THE EVALUATION STRATEGY
AND RESPONSIBILITIES OF COMPONENT PARTIES

AREAS OF EVALUATION

COMPONENT PARTIES	1. Design	2. Context	3. Management	4. Instruction	5. Information	6. Cost	7. Evaluation	8. Documentation
1. Eight LEA Delivery Sites	1	1	1	1	2	1	2	1
2. RCU	4	3	3	3	2	3	1	4
3. DVTE	1	4	1	3	1	1	4	4

Scale of Responsibility of Component Parties

1. Major Responsibility
2. Minor Responsibility
3. No Responsibility
4. Special Conditions

SECTION II. EVALUATION RESULTS

Section II of this report presents the results of the evaluation by each of eight topic areas. Some of the results are based upon data in other reports, especially by the RCU and that data is not reproduced in this document.

2.1 Project Design - Goals, Objectives, Review and Monitoring

It should be recognized that many times the stated objectives embodied within a proposal are not entirely appropriate once the project begins its implementation or becomes operational. On the other hand, in the interest of "accountability", a project has a responsibility to conceptualize its reason for being and attempt to achieve its stated objectives. The design of each of the eight exemplary programs should and did have the cooperative efforts of the LEA and DVTE. The state plan for vocational education specifies the following for exemplary projects in terms of form and content of proposals.

1. All solicited and unsolicited applications shall describe:
   - a) Purpose
   - b) Use to be made of results
   - c) Nature and/or plan of project
   - d) Time schedule and duration
   - e) Qualification of personnel
   - f) Available facilities
   - g) Budget, by fiscal year, indicating proportion of cost to be borne by applicant

2. Proposals shall be reviewed in terms of:
    - a) Meeting student needs
    - b) Reducing unemployment
    - c) Cooperation between schools and manpower agencies
    - d) Relevance to long-range planning
    - e) Adequacy of personnel and facilities
    - f) Costs

In review of the proposals submitted, they generally followed the outline of (1) above and all proposals were found to contain the elements specified in (1) above. In this respect the format of proposal design conformed to the specific guidelines as specified in the state plan. The individual project proposals tended to emphasize certain areas of (1) above to greater or lesser degrees.

Since the projects were funded prior to the time of involvement by EMS no direct observation of the review process could be conducted. In this respect, only the following general statement is made. In review of the proposals an evaluation criteria should be established by the DVTE and made known to the applicants prior to submission. This might include a "weighting" system applied to the areas of review. It should be noted that some applicants (districts) will be inherently different on some of the criteria of (2) above and special consideration may have to be given by the DVTE. For example larger school districts generally have more specialized personnel and facilities than do smaller districts. The criteria associated with adequacy of personnel and facilities should not be such as to work to the disadvantage of an inherently different applicant and there was no evidence that such was the case for the current projects.

The general design of the Minnesota Model includes eight LEA's. An alternative model could have been to award all the funds to one LEA. This approach as viewed by EMS, would have necessarily meant the involvement of a single, large LEA. In viewing Minnesota it must be recalled that the state has about 450 school districts. Although a majority of the state's students are found in a minority of the districts, it is not necessarily true that the needs addressed in that state plan are centered in any one or any group of schools. In review of the portion of the state plan that addresses exemplary projects, no part of that plan with the possible exception of adequacy of facilities and personnel, would favor a one site versus an eight site model. However, there appears to be nothing in the state plan which would necessarily indicate that a multiple site model should be selected either. In review it appears that all aspects of the state plan were given consideration in arriving at the general design and selection of the eight site model.

The reaction to the eight site model by LEA personnel was positive. Superintendents, project directors and teachers who were interviewed generally stressed the importance of the eight site model. The move toward regionalism was cited as one advantage of the approach where programs can be designed to fit the needs of communities in a given area. Propinquity, of course, was another advantage, especially from the viewpoint of out-state project personnel. They felt that being close to the project was of great value to the surrounding schools, as well as for themselves.

The eight site approach has the advantage of involving more people directly in career education, according to the people interviewed. In this way, it gives teachers a feeling of having a part in the development of the project. The teachers involved will then impress upon their colleagues the importance of career education. The evaluation team believes that this did, indeed, play an important part. It was apparent that teachers who had been directly involved or even indirectly involved, possibly through in-service training, were more knowledgeable of career concepts, appeared more interested in career education and were more directly applying the concepts laid down in the project proposal than teachers who were not involved.

Other advantages cited were the "humanizing" effect of smaller, more diverse projects, less bureaucratic pressure and the flexibility in adjusting the program as time progressed to meet the changing needs of the community.

The evaluation team cannot conclude that the eight site model is superior to the one site model since no direct comparison was possible. However, the acceptance by LEA personnel of a multiple site design was much higher than that perceived of a single site. It should be noted that the one site model can be viewed as having advantages. Central control, featuring articulation among units, if the project were efficiently administered, would be viewed as an advantage. The focusing of resources at one site and the creation of materials coordinated closely with program developments may be another. Many of the advantages cited by the members of the eight site model could also be construed to be an advantage offered by a one site model. However, if the sample of personnel interview is a valid representation it must be concluded that the acceptance by the Minnesota educational community of an eight site model is much greater than their perceived acceptance of a one site model.

As stated previously the goals and objectives specified in the proposals may not necessarily be those in practice. Without belaboring the point, it should be noted that most of the proposals contain goal statements rather than performance objectives. All the projects stated goals in the area of improving students' attitudes and knowledge about the world of work, i.e.:

. . . to provide students with a basic orientation and understanding of the world of work.

. . . To develop an attitude of respectability and dignity of work in all types of jobs.

. . . Design a career decision-making model that will be employed to help students identify their individual abilities, interest, and aptitudes and match them with the requisites needed for different occupations.

These types of goals (objectives) are found in all proposals and are currently stated by both administration and teachers at all of the eight delivery sites. From observation it was evident to the evaluation team that these types of goals were and are a central theme in each of the delivery sites.

A greater emphasis, at least in number, is placed upon process centered goals. These types of goals include the development of in-service, curriculum materials and career information centers such as:

. . . To plan units of instruction that will include career information as part of the course work for elementary and high school students.

. . . To provide in-service education for teachers in the area of career education.

. . . To establish career education centers in conjunction with departmental information resource centers.

Some of these goals have been completed, others deferred, others are in process or have been discontinued altogether. In general, from examination of project's proposed goals versus what goals are being currently pursued, general agreement was found between so-called product goals but some discrepancies were found in the process goals. This discrepancy should not, however, be interpreted as a negative finding but rather as simply a difference between actual practice and proposed practice. In this respect, the evaluation team recommends that projects review each of their goals to determine which, in their opinion, have been implemented and what degree of success has been achieved. In this manner a pattern of evolution of the projects could be documented. This effort should be made with its intent being one of increasing the knowledge about project evolution rather than an evaluation/accountability mechanism.

In summary, the initial design of the "Minnesota Model" followed the procedures and conditions set forth in the state plan. The goals and objectives specified in the original proposals are generally still applicable and being pursued by the LEA's. The design of the entire model initially and currently continues to adhere to governing specifications.

2.2 Contextual Analysis

The specific process of contextual analysis can be examined in four stages: 1) initial conceptualization of the model itself as one manifestation of the philosophy of career education; 2) stated project goals and objectives derived from the initial conceptualization of that model; 3) specific "forms" first assumed as the goals and objectives were implemented by the project; and 4) the continuing change and development experiences through implementation of goals and objectives, together with the operational form as a project functions over time.

If one considers that each of the eight sites could have potentially conceived a model program much different from each other, one could then possibly explain this in terms of the basic difference in the communities as noted in Section 1 of this report. However, it is the impression of the evaluation team that not only the basic goals of the eight projects but, also, the general strategies employed are more similar than different. This might be explained in terms of common philosophical base for career education. Apparently, the conceptualization of the program at each of the eight sites have been based upon a similar origin. A point of common origin would of course be the writings and materials produced on a national level. However, evidence exists at the state level of a coordinated approach to career education. A conceptual statement has been developed at the state level as well as by the RCU. Further, the DVTE has taken a leadership role for the Department of Education as it relates to careet education. Both administrators and teachers at the eight delivery sites noted these facts.

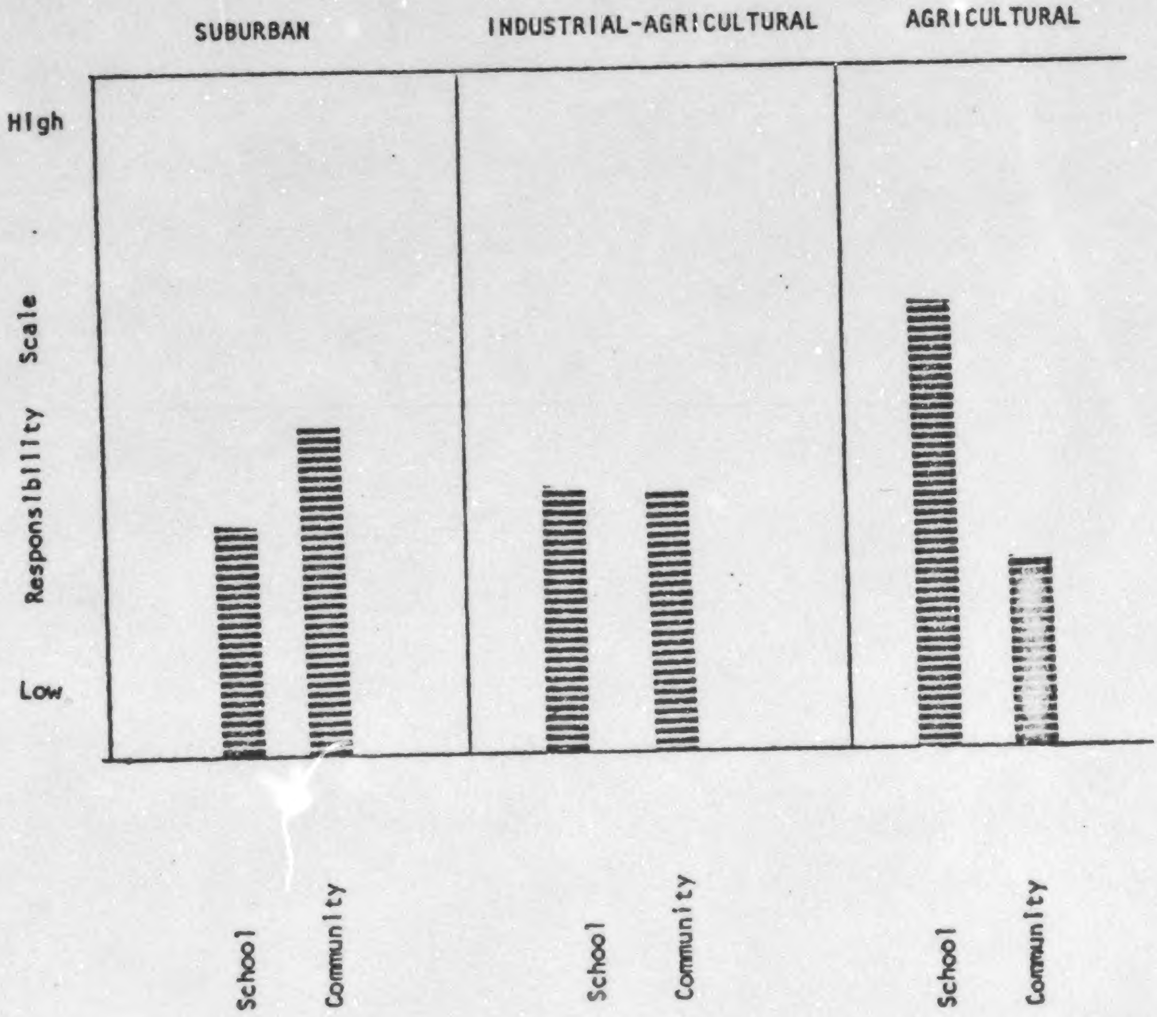
In responding to questions during site visits relating to the broad spectrum of the DVTE, many people interviewed expressed concerns about what they termed the "division" between career education and technical education. Several stated that they felt this division detracted from the potential progress of the career education project. There is speculation among LEA personnel that the top level administrators in the State Department of Education have given career education a lower priority than it held two years previous. Factors cited were that a) it appeared to many individuals that the high priority verbalized by state department officials was not in reality practice since the DVTE was charged with the responsibility of implementing programs, other parts of the department did not view career education as a high priority, and b) career education is basically a broader concept and applies to all areas of education, not just to vocational technical education.

Another factor, that of the local community, has given a particular contextual "flavor" to the project. In review of the original proposals, the community was always proposed as an active partner in the career education program. Goals and objectives of the proposals reflected the need for involvement between the schools and the communities. The context of the communities appeared to have a significant effect upon the strategy of the delivery system. A portion of Section 1 of this report discussed the three types of communities - Suburban, Industrial-Agriculture and Agricultural. One of the basic assumptions of career education is the active participation of the total community, not only the school, in the educational process. As mentioned, this was a common theme of each of the proposals. However, if one examines the current responsibility of career education as a function of the school as compared to the community a significant difference is noted between the operation of the three community types. This difference in practice seems to be much more apparent than that reflected in the original proposals. Figure 2.1 presents a relative comparison of the responsibility of school and communities by the three community types. It should be noted that the following general statements may not apply equally to each community within a type.

In comparing the responsibilities of schools and communities, for the suburban projects, a relatively greater proportion of responsibility for the career education program can be and is being assumed by the communities. For example, in these communities reside individuals of many backgrounds who

Figure 2.1

RELATIVE RESPONSIBILITY FOR CAREER EDUCATION BY COMMUNITY TYPE



are available for instruction purposes. Likewise students have access through the community to a wide diversity of occupational information. Students could observe almost any occupation in action. In the Industrial-Agricultural communities, the responsibility is more evenly shared. These communities usually have a diversity of resources but not as broad as that of the metro areas. Some of the more specialized occupations may not be found in these communities. In the agricultural community, the school must assume an increasing responsibility for career education. Limited resources are available within the immediate community. For example, "First hand" information about occupations may not be available to the student without commuting to a metro location. In these areas, schools must assume the major responsibility for securing such information for their students. These contextual factors have made a subtle but observable difference in the conduct of the projects.

The above contextual factors, not necessarily recognized in the initial proposal designs, also give support to the implementation of an eight site versus a one site model. While the implementation design of the projects was similar, the need to make "adjustments" of actions on the basis of local community resources has been observed. This factor might not have been discovered if only a single site model had been implemented.

Contextual factors more immediate to the projects and students are more difficult to generalize. It is anticipated that the final evaluation report of the RCU will address a number of student variables and relate these to outcomes. It was evident that organization and attitudes of district administrators also help to shape the projects. Discussion of this point will be in the next section. In summary, a number of factors at the federal, state and local levels provide a context and help to shape the particular projects.

Some are predictable and some are not. Those which are, for example, the resource support level of a community, should be a part of future planning for similar projects.

2.3 Review of Management

Management was reviewed to assess the processes and products of the project in defining, developing and implementing an organizational plan for management, its inception, refinement and operation. This included identification and/or adoption of new or existing management plans. Further, an attempt was made to determine the method(s) by which this occurred, the persons and/or organization who were primarily responsible for the inception of the basic plan and/or its revisions.

The eight project sites employed various organizational and administrative strategies. At one site an elementary principal served ss a part-time project director; in another, a teacher was employed as part-time director; in still another, the vocational education director was utilized as part-time project director. In at least one district, the project directors' responsibilities were shared. Because of their size, none of the project sites employed a full-time director whose sole duties were the career education project. The larger schools typically utilize the services of the staff member who is already assigned coordinating or directorship responsibilities in the area of vocational-technical education. The middle-sized schools, the industrial-agricultural communities, tend not to have a full-time regular staff member devoted to coordinating or directing the vocational education program. Therefore, these schools employed either teacher personnel or other administrative personnel on a part-time assignment basis for the duties of the project director. This is also true of the agricultural community's school in

Plainview. In discussions with project personnel and observations of projects' actions, it appears that the following observations regarding the organizational and administrative structure are justified:

1. There is a direct relationship between progress of project activities and the degree to which the project director is a full-time line administrator. In schools where the project director is either a principal or central office administrator who has line authority over teachers, it appears that projects are more efficient and productive in their operations. Project directors who have the complete support of line administrators, but who are not themselves line administrators, also function effectively.
(NOTE: We are not making a qualitative judgement of the processes or products at this point in time; only the quantity of activity generated and the overall efficiency observed.) Of all the projects, the one that appears most efficient is the one in which the career education model is located in one school in which the principal is a half-time project director. In this situation, the director has full line authority over all teachers involved in the project.

The second level of efficiency of management appears to rest in areas where the project director is a part-time administrator who does not have line authority. This position is characterized by an administrator who may be a coordinator of vocational education, director of elementary education, etc. In these situations, the project directors are administrators who do not have classroom teaching assignments during the day and, although they may be devoted only part time to the career project, they are free to meet with teachers, usually throughout the day, at the convenience of the teachers.

This second level is contrasted with the third level in which teachers have been selected for project directorship on a part-time basis and who have remaining responsibilities as far as classroom education. In these situations, the project director is free only designated hours. The director is usually a secondary teacher who has a half-time teaching load and can meet with teachers only before or after school or during his designated free hours. This situation appears to limit the access of teachers to the project director.

2. Another consideration of the organizational and administrative strategies is the level of commitment by top level administrators in the school district. This situation may also be related to the size of the school district. For example, in the smaller schools, in many instances, the career orientation program was the top priority - or, at least one of the top priorities - of the superintendent and top administrators. In the larger suburban area schools, the program of career education often had to contest for time with other worthwhile and needed programs and could not become a high priority commitment of the top level administrators. The evaluation team members gained the distinct impression that where top level administrators were supportive of the program, the reflection on the amount of activities and the offerings of the program were greatly enhanced.

This impression was generally supported by the data contained in Table 2.1. This table contains data generated by the RCU on teacher activities at seven of the eight sites. (One site, White Bear Lake, was not included since its project just began operation this year.) With minor discrepancy, those sites which show the greatest number of instructor hours would reflect the level of greater commitment by the top level administrators. It should also be noted that the amount of instmuctor time is not positively correlated with district size. Rather, it is somewhat negatively correlated. In general, the evaluation team concludes that the data obtained through interview, observations and teacher process questionnaires from the RCU indicate that the attitude and impact of top level administrators has a direct relationship to the level of activity generated by the project.

TABLE 2.1

COMPOSITE INSTRUCTOR TIME*

	SUBURBAN SITES						INDUSTRIAL-AGRICULTURAL SITES										AGRICULTURAL	
	OSSEO		ROSEVILLE		AVER.		CLOQUET		OWATONNA		RED WING		WILLMAR		AVER.		PLAINVIEW	
METHODS	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.
Field Trip	13.2	40.2	6.7	70.7	9.4	83.5	11.0	112.0	11.9	462.0	6.0	521.3	17.6	131.7	8.6	306.8	7.0	110.8
Workers in Class	8.0	58.8	7.5	78.8	7.7	68.8	5.9	60.5	9.6	372.5	6.1	525.2	8.0	60.0	7.1	254.5	13.1	206.5
Work Observation-Interview	1.7	12.3	4.4	46.3	3.3	29.3	3.5	35.7	2.8	109.5	2.6	223.5	4.9	37.0	2.8	101.4	2.3	36.3
Work Experience	5.7	42.0	1.6	16.3	3.3	29.2	4.2	42.8	3.7	145.5	8.9	767.0	2.4	17.8	6.8	243.3	7.9	123.7
Audio-Visual	7.9	57.8	13.5	142.5	11.2	100.2	7.6	78.2	21.5	837.7	11.3	972.8	22.3	167.0	14.4	513.9	12.3	193.5
Role Playing(plays, skits, etc.)	3.3	24.3	4.9	51.5	4.3	37.9	4.5	46.2	7.6	294.7	4.2	360.2	5.8	43.7	5.2	186.2	7.1	111.8
Career Games	3.2	23.5	4.9	51.0	4.2	37.3	1.9	19.2	4.6	178.8	2.6	222.8	1.8	13.3	3.0	108.5	3.7	58.7
Presentation-Discussion	13.1	96.0	21.5	225.8	18.0	160.9	16.8	172.0	15.5	605.3	15.7	1357.8	17.2	126.7	15.8	566	14.7	231.5
Projects in Class	14.9	108.8	21.6	227.7	18.9	168.3	21.5	219.8	12.9	504.0	15.8	1366.5	10.4	78.0	15.2	542.1	21.6	340.8
Inter-Class Proj.	4.2	30.7	2.5	26.8	3.2	28.6	2.1	21.2	1.9	75.0	1.9	162.2	1.1	8.5	1.9	66.7	.4	7.0
Simulated Work Experience	17.1	125.3	6.8	71.8	11.0	98.6	12.5	128.0	4	155.0	6.8	585.2	2.7	20.5	6.2	222.2	4.2	65.7
Counseling and Guidance	5.0	36.5	2.6	27.7	3.6	32.1	6.8	70.0	1.1	42.5	15.0	1298.3	1.6	12.3	10.0	355.8	2.5	39.7
Use of Information Center	2.7	19.3	1.5	15.5	1.9	17.4	1.7	17.0	2.9	112.3	3.1	264.8	4.2	31.7	3.0	106.5	50.7	50.7
TOTALS	100%	731.7	100%	1052.2	100%	892	100%	1022.5	100%	3894.8	100%	8627.7	100%	750.2	100%	3573.8	100%	1576.7

TABLE 2.1 Cont.

COMPOSITE INSTRUCTOR TIME*

	SUBURBAN SITES						INDUSTRIAL-AGRICULTURAL SITES										AGRICULTURAL	
	OSSEO		ROSEVILLE		AVER.		CLOQUET		OWATONNA		RED WING		WILLMAR		AVER.		PLAINVIEW	
URRICULUM ORG.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.	%	hrs.
eparate Units	15	110.0	17.2	181.5	16.3	145.8	14.3	146.5	15.2	589.3	26.7	2292.2	14.4	107.7	22.0	783.9	23.8	372.3
eparate Classes	21.6	158.7	10.4	110.0	15.0	134.4	18.3	186.8	14.3	554.8	20.5	1765.3	15.3	115.2	18.4	655.5	15.5	243.2
ntegrated with ourse Content	63.4	466.5	72.4	764.7	68.7	615.6	67.4	889.2	70.5	2736.8	52.8	4537.0	70.3	527.3	59.6	2122.6	60.7	950.8
TOTALS	100%	735.2	100%	1056.2	100%	895.8	100%	1022.5	100%	3881.0	100%	8594.5	100%	750.2	100%	3562	100%	1566.3

*Data obtained for reports of the RCU

The strategy of teacher involvement varies considerably from project site to site. Techniques used vary from asking for teacher volunteers, to teachers being selected, to performance contracting, and to mandated involvement of entire systems. The acceptance by teachers also varies by grade level within a given site. The acceptance by elementary teachers is generally greater than that of secondary teachers. This is true of their willingness to volunteer as well as the amount of activities observed as a result of their participation in the program. There also appears to be an attitudinal difference between elementary and secondary teachers. Its reasons might be explained in the following way.

Elementary teachers have to work with the educational process of the whole child; i.e., the elementary child generally only sees one teacher for classes, with a small amount of specialization for music and phy. ed. Thus, the "whole" responsibility for education lies with the elementary teacher. Since career education is seen as an integrated process of education, it, therefore, is a part of the responsibility of the elementary teacher. At the secondary levels, teaching is departmentalized and teachers often see themselves as subject matter specialists. Mathematics, with or without an attitudinal dimension, is the responsibility of the mathematics teacher. Other aspects of the students development is often viewed as someone else's responsibility. This attitude is often strengthened by the administrator and "accountability" systems of the school; i.e., mathematics teachers are held accountable for mathematics, etc.

In observation of the secondary programs, the study team concluded that the impact of career education is less than that in the elementary grades. Generally, the strategy employed in the secondary schools is the establishment of resource centers for student information. Involvement of the students usually comes in the area of social studies and/or guidance. In discussion with teachers and project personnel, most were aware of the difficulty in integrating career concepts into secondary education. There was general agreement that the most effective way to "access" the secondary program is through a "neutral" district-wide area like guidance. Generally, this was the avenue followed by the secondary programs. One site has made successful utilization of performance contracting at the secondary level. This mechanism has the advantage of securing so called "volunteer" teachers who are also directly rewarded for their efforts. In the opinion of the evaluation team, this management strategy has the potential for access to the secondary schools and promises to be effective.

Interviews with LEA personnel were structured to elicit responses from school administrators, project directors and teachers about their contacts with State Department personnel. Reference was made to design, implementation, progress, communication and evaluation responsibilities by the State Division of Vocational-Technical Education.

Most people interviewed were very positive in their reactions to State Department personnel with whom they have had contact related to this project. They felt that the leadership has been excellent by the personnel directly in charge of the project. Most of those interviewed indicated that it would be advantageous to their project to have more contact and communication with the members of the State Department team. More on-site visits were requested.

In summary, the responsibility for management was centered with the project sites and the DVTE. The interface between the LEA sites and the DVTE operated well. Communication patterns had been established and problems met with solutions. The only criticism which was voiced was the need for more on-site involvement by State Department personnel. In regard to the organizational structure of the project sites, the size of the grants generally determined that there would be two levels, that of a part-time project director and teachers.

The position occupied by the project director in the organization (LEA) appears to have a major influence upon the activities of the project. The higher his position and the more his direct line authority, the more influence he has and subsequently the greater activity of the project. Likewise, the commitment made by top level administrators plays an effective role in project activities. The more commitment, at least visible commitment, the greater the amount of activities generated.

2.4 Review of Instructional Systems

Whatever physical settings and delivery models exist for education projects, the nucleus of each is the instructional system. Although the training modes, organizational methods and clients have some diversity among project, they hold in common the desire to help individuals choose and be trained for improved career adaptation. Any plan for training implies the presence of an educational structure or system that provides career awareness, career exploration, career preparation and, if necessary, assistance in learning fundamental skills such as reading, writing and arithmetic.

The processes employed by the eight sites vary considerably, while at the same time, have some commonalities. One of the common threads linking the projects through process is the utilization of in-service training for teachers prior to the initiation of the project as well as during the project. All eight sites use some type of in-service training for teachers. The results of the training and the enthusiasm of both administrators and teachers for the in-service varies somewhat among the sites, but is generally held in high regard. Project directors and most teachers interviewed indicated that the in-service training forms the backbone of the project.

Many teachers, although doing some things already in the area of career orientation, were really not aware of many of the techniques or materials available. Likewise, many of the teachers were not aware of the possibilities within their own locality regarding careers and career orientation. Teachers quite often indicated that they felt confident in discussing careers much like their own careers; i.e., professional careers such as doctors, lawyers, teachers, etc. Elementary teachers also indicated confidence in being able to discuss with students, the traditional careers dealt with in the elementary grades, such as doctors, firemen, policemen, nurses, etc. However, as teachers moved away from the more familiar careers to less familiar careers, they voiced a strong need for in-service education.

A number of the sites have responded by taking teacher field trip days in which teachers tour companies within and near their local communities to gather first-hand information on various career opportunities. This strategy has been utilized by a number of the projects and it appeared to the study team that this was a very valuable activity for teacher training. However, this effort has, in some instances, been only an extension of what had been done in the past. In some sites, contacts with industry and field trips are encouraged in theory but limited in practice by administrative constraints.

Another positive aspect of teacher in-service was that of bringing in outside speakers to speak to teacher groups on the area of career education. In some instances, this constituted a kick-off to the project. In respect to this activity, it appears that its usefulness is short-lived unless it becomes quite specific to various job occupations and tasks. In some instances, where large groups of teachers had gathered to hear speakers, teachers felt that the speakers did not address their questions and that the sessions were not as productive as they envisioned. In sessions held later in the year, some of these problems were resolved.

Some sites utilized employer representatives from the local communities to come in and speak to teachers regarding employer expectations of employees. These sessions appeared to be valuable to teachers, especially if they were conducted in small groups in which teachers who attended the group had a genuine interest in the employment area that was being discussed. In general, it appeared that large group settings for in-service were not as productive as smaller group settings which were more specific.

In another activity which relates both to the process and to the products produced, most of the projects employed teachers for varying amounts of time to develop curriculum and/or career orientation activities for use in their classroom and other classrooms in the project schools. This met with varying degrees of success under varying circumstances. In terms of the volume of materials produced, it appears that when teachers are employed for block periods of time, namely, recruited for two weeks or more during summer vacation for curriculum writing duties, that a greater quantity of products are produced than when teachers are recruited periodically on Saturdays during the school term to produce curriculum. A number of the project directors indicated that there must be paid time available during the summer months if one is to successfully produce curriculum materials.

With the exception of two sites, the remaining sites have concentrated their efforts upon the elementary grades during the first year of operation. During the second year of operation, many of the sites have progressed into the junior high and, in some cases, into the senior high school area. Delivery strategies also varied among and within sites according to different grade levels. At the elementary grades, the activities generally centered around orientation programs for students to the various employment opportunities, not only within the immediate area of the project, but also on a broader scale.

At the middle grades, more effort was placed on "fact finding" by students; that is, students did extended research into specific job opportunities in which they may be interested. This usually involved a broader spectrum of job opportunities than was usually investigated in upper grades. In the upper grades, the primary emphasis was upon in-depth research into a smaller selected number of job opportunities. This might include in-depth research of various careers by students, or it might include actual participation by students in the employment setting.

In terms of the products produced by the schools, they vary also. There is, within the eight project sites, a varying emphasis on specific curriculum materials. However, all sites have produced some curriculum or career orientation activities. These may vary from informal activities which have been distributed by teachers or by the project director to other interested teachers to a formal curriculum manual for career orientation which has been formally adopted by the Board of Education and distributed to all project teachers at appropriate grade levels throughout the school system. There appears to be advantages and disadvantages to this technique. Some teachers voiced a strong degree of satisfaction with the curriculum materials in that the materials were easily understood by them, directly usable by them and provided valuable experiences for their students. Generally, teachers requested some form of documentation. Other teachers expressed almost the opposite view. This may, in part, be due to the type of in-service that was provided to teachers. Some teachers expressed the idea that the curriculum manuals or activity guides were so voluminous and encompassing that they could not see any utility in their application.

One other process related to the production of products is noteworthy. One of the districts is utilizing a system of mini-grants to teachers and their students for project activities. Under this system a formal contract is written with a teacher to develop a given project under certain conditions with production of certain products. The project will then reimburse the teacher with certain materials, supplies, etc., utilized in the project as well as a stipend to the teacher for specific curriculum development. Although this project began operating just during the past year, it offers considerable promise in terms of its processed used to develop products. At least one other project has expressed an interest in adopting this procedure.

It appears that there is no relationship between the processes and the products of the sites as related to their size, location or other general descriptors of the project as discussed previously. The only thread that may flow through the projects is the fact that larger projects, namely those in the metropolitan area, tend to select either pilot schools and pilot teachers or both. These systems, for the amount of money available to the projects, are too large to develop the project in an entire school, through an entire grade level or through an entire district. In smaller schools, the project has involved all the teachers at certain grade levels, all the teachers at a particular building or even, in some cases, tried to involve all teachers in the district.

Student outcomes, as related to the instructional system, are being assessed by the RCU through a series of tests. A discussion of this aspect will be given later in this report under Review of Internal Evaluation. Separate reports on this aspect are also being produced by the RCU.

2.5 Review of Information Systems

The primary purpose of an information system is to satisfy the information needs of an organization - which are mainly concerned with decision making.

The system must provide accurate and timely data with which to expedite these decisions. In this way, it serves organization management as a tool to facilitate the adequate control and guidance of the production of the services and/or products for which the organization exists.

For many people, the term "information system" has the connotation of a highly mechanized or automated scheme or system with a faily complex and obscure structure. An information system need not be large, complex or automated to be effective. A simple manual process of collection and reporting data can be very successful if it has been developed in the complete reflection of the needs of an organization it serves. All functioning organizations, regardless of their size or purpose, have an information system of some sort - intentional or not. The question is whether or not an organization's collection and use of its operating data is systematic. Usually, the more systematic the process, the more efficient and effective it and its host organization tend to be.

For purposes of this evaluation, the review of the information system was divided into two general areas:

a. Information about the project and career education but not including information delivered directly to students in the instructional process. This would include general project dissemination and resource information, books, manuals, materials, etc., about career education generally utilized by teachers, such as professional resource center.

b. Internal and external information which was utilized as feedback for use in management. This portion of the information system would integrate very closely with the evaluation system.

All the project sites have developed some type of professional resource centers. The extent to which they have been developed, their utilization and apparent effectiveness varies. There appears to be no specific relationships between the sites and the utility of the professional resource center other than the possibility of logistics for some of the larger, more diverse project sites. Although specific use of materials could not be determined from existing records, teacher reactions to use of materials related closely to accessibility. Teachers who were physically located in the same building as the resource center tended to report greater usage of materials. More formal methods of distributing information to teachers usually involved a staff newsletter published by the project. The evaluation team generally perceived the information system to be operating effectively within each of the project sites.

Feedback information to the sites for use in management generally consisted of informal feedback. Later in the school year, when the teachers "Self Evaluation of Career Education" instrument became operational, more formal feedback was available. This device provides formal feedback to both the project directors and participating teachers related to the type, amount and effectiveness of instructional activities (see Tables 2.1-2.4). The problems and delays involved in producing the instrument and the process of data collection and feedback prevented this system from becoming an effective management tool during this past year. By the time the system became fully operational, it was too late in the school year to make effective changes, if such were desired. However, the system is now fully operational and should provide timely feedback to project during the next school year. In discussing the instrument with teachers, a problem was encountered with clarity of the form and its directions. The instrument has undergone revisions and with orientation or re-orientation of teachers, this system could be useful for feedback to projects and teachers.

2.6 Review of Costs

A project's plan and associated procedures for accounting for its expenditures is important for two separate reasons: (1) simple necessity for the project

TABLE 2.2

FREQUENCY OF TEACHING METHODS USED

	SUBURBAN SITES						INDUSTRIAL-AGRICULTURAL SITES										AGRICULTURAL	
	ROSEVILLE		OSSEO		AVE.		CLOQUET		OWATONNA		RED WING		WILLMAR		AVE.		PLAINVIEW	
METHODS	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F
Field Trip	3.8	25	10.7	25	5.6	25	7.8	31	5.7	174	4.1	169	9.3	66	5.3	110	5.5	50
Workers in Class	8.0	53	9.0	21	8.3	37	6.8	27	9.7	298	6.5	264	8.6	61	7.9	162.5	10.2	92
Work Observation-Interview	6.4	42	2.1	5	5.3	23.5	3.8	15	2.4	74	3.0	125	7.2	51	3.2	66.3	2.4	22
Work Experience	1.2	8	6.8	16	2.7	12	3.3	13	2.9	88	5.8	237	2.3	16	4.3	38.5	5.2	47
Audio-Visual	20.0	132	11.1	26	17.7	79	10.8	43	29.7	909	19.6	802	27.3	194	23.6	487	17.6	159
Role Playing (Plays, skits)	5.2	34	5.6	13	5.3	23.5	3.8	15	6.4	195	4.5	185	5.2	37	5.2	108	8.0	72
Career Games	4.7	31	3.0	7	4.3	19	2.3	9	5.3	161	2.9	120	2.1	15	3.7	76.3	5.8	52
Presentation-Discussion	25.7	166	13.7	32	22.2	99	21.1	84	18.8	576	25.0	1022	22.2	158	22.3	460	18.0	163
Projects in Class	15.5	102	14.5	34	15.2	68	20.9	83	11.1	339	11.5	470	7.6	54	11.4	236.5	13.4	121
Inter-Class Projects	2.1	14	2.6	6	2.2	10	2.0	8	1.7	51	1.5	61	1.4	10	1.6	32.5	1.0	9
Simulated Work Experience	3.6	24	9.0	21	5.0	22.5	8.3	33	2.1	65	3.9	159	1.8	13	3.3	67.5	3.2	[illegible]
Counseling and Guidance	2.6	17	8.5	20	4.1	18.5	6.8	27	1.3	41	8.4	343	1.8	13	5.1	106	2.4	22
Use of Information Center	1.7	11	3.4	8	2.1	9.5	2.3	9	2.9	88	3.3	135	3.2	23	3.1	63.8	7.3	[illegible]
TOTALS	100%	659	100%	234	100%	446.5	100%	397	100%	3059	100%	4092	100%	711	100%	2064.9	100%	[illegible]
CURRICULUM ORGANIZATION																		
Separate Units	16.3	108	16.6	39	16.		15.6	62	15.3	465	21.9	891	14.4	102	18.5	308	20.0	180
Separate Classes	14.5	96	20.0	47	15.9	71.8	12.1	48	16.7	509	21.1	862	14.9	106	18.5	381.3	11.2	[illegible]
Integrated w/Course Content	69.2	458	63.4	149	67.7	303.5	72.3	287	68.0	2072	57.0	2322	70.7	503	63.0	2064	68.8	614
TOTALS	100%	662	100%	235	100%	448.5	100%	397	100%	3046	100%	4075	100%	711	100%	2057.3	100%	903

TABLE 2.3

AVERAGE NUMBER OF STUDENTS SERVED BY VARIOUS TEACHING METHODS

METHODS	SUBURBAN SITES			INDUSTRIAL-AGRICULTURAL SITES					AGRICULTURAL
	OSSEO	ROSEVILLE	AVER.	CLOQUET	OWATONNA	RED WING	WILLMAR	AVER.	PLAINVIEW
Field Trip	30.8	40.5	35.7	23.9	35.2	32.5	30.2	30.5	38.6
Workers in Class	25.2	36.5	30.9	47.3	29.8	46.4	30.8	38.6	43.8
Work Observation-Interview	53.6	35.9	44.8	22.3	32.0	39.8	28.2	30.6	38.0
Work Experience	15.2	30.2	22.7	16.8	22.5	26.5	29.4	23.8	26.4
Audio-Visual	29.5	29.6	29.6	39.3	27.5	41.6	28.1	34.2	45.1
Role Playing (plays, skits)	40.1	24.5	32.3	35.3	27.0	44.6	27.3	33.6	45.5
Career Games	20.3	35.1	28.2	41.3	26.7	38.7	31.6	34.6	41.2
Presentation-Discussion	26.3	35.4	30.8	39.5	27.6	40.9	25.4	33.4	44.8
Projects in Class.	31.9	31.5	31.7	27.2	26.3	47.0	29.0	32.4	41.9
Inter-Class Projects	53.3	36.4	44.9	64.7	31.3	47.4	34.5	44.5	35.7
Simulated Work Experience	19.5	29.8	24.7	33.0	27.8	50.3	29.9	35.3	47.6
Counseling and Guidance	31.4	23.9	27.7	23.2	23.4	38.0	26.0	27.7	54.0
Use of Information Center	24.7	39.3	32	50.7	25.2	48.9	26.4	37.8	51.2
TOTALS	28.7	33.0	30.9	33.8	27.9	41.4	28.1	32.8	43.5
CURRICULUM ORGANIZATION									
Separate Units	22.4	38.2	30.3	21.6	28.6	36.4	26.1	28.2	38.1
Separate Classes	22.7	30.5	26.6	31.5	26.2	37.0	29.4	31.0	37.9
Integrated w/course content	32.3	32.2	32.3	36.4	28.1	45.1	28.2	34.6	45.9
TOTALS	28.7	32.9	30.8	33.8	27.9	41.5	28.1	32.8	43.5

TABLE 2.4

PERCENTAGE DISTRIBUTION OF TEACHING METHODS RECEIVING A RATING OF EXCELLENT

METHODS	SUBURBAN SITES			INDUSTRIAL-AGRICULTURAL SITES					AGRICULTURAL
	OSSEO	ROSEVILLE	AVE	CLOQUET	OWATONNA	RED WING	WILLMAR	AVE	PLAINVIEW
Field Trip	88.0	88.0	88.0	80.6	93.7	79.9	80.3	83.6	88.0
Workers in Class	38.1	49.1	43.6	77.8	79.5	68.6	68.9	73.7	66.3
Work Observation-Interview	40.0	42.9	41.5	73.3	67.6	52.8	62.7	64.1	50.0
Work Experience	56.3	75.0	45.7	53.8	65.9	38.8	62.5	55.3	46.8
Audio-Visual	46.2	34.8	40.5	48.8	56.9	50.4	66.0	55.5	44.0
Role Playing (Plays, Skits)	69.2	52.9	61.1	73.3	73.3	56.8	81.1	71.1	72.2
Career Games	57.1	48.4	52.8	55.6	67.7	59.2	80.0	65.6	76.9
Presentation-Discussion	37.5	38.0	37.8	41.7	50.3	37.4	63.3	48.2	44.8
Projects in Class	70.6	52.0	61.2	57.8	66.4	53.8	64.3	60.7	48.8
Inter-Class Projects	66.7	28.6	47.7	25.0	49.0	54.1	80.0	52.0	77.8
Simulated Work Experience	81.0	79.2	80.1	87.9	84.6	52.8	76.9	75.6	41.4
Counseling and Guidance	65.0	23.5	44.3	59.3	73.2	46.1	92.3	67.7	22.7
Use of Information Center	50.0	27.3	38.7	33.3	67.0	41.5	43.5	46.3	22.7
TOTALS	59.8	45.1	52.5	58.9	64.1	49.4	67.8	60.1	52.1
CURRICULUM ORGANIZATION									
Separate Units	82.1	48.1	65.1	77.4	66.5	58.6	79.4	70.5	52.2
Separate Claswes	53.2	57.3	55.3	85.4	60.9	49.0	70.8	66.5	53.5
Integrated with Course Content	56.4	41.9	49.2	50.5	64.5	45.9	64.8	56.4	51.5
TOTALS	60.0	45.2	52.6	58.9	64.2	49.3	67.8	60.1	51.9

to function in a business-like manner and to account completely for the expenditures of its funding, and (2) its responsibility as a research and development project to accurately fix the cost of its various processes and products in an effort to analyze its effectiveness and to promote possible replication.

The first of these is, of course, the most direct and is easily accomplished. All LEA's have standard accounting practices and follow the federal guidelines relating to cost accounting, etc. No formal review of cost accounting practices was conducted by the evaluation team. However, in discussion with the project director, the working relationship between the LEA and the DVTE as it related to budgets, cost accounting and receipt of monies was considered very good. Projects reported receiving monies on time and that the DVTE granted reasonable budget reallocations quickly. Apparently, no major problems exist in this area between the LEA and the DVTE.

The second area was very difficult to assess. It was difficult to allocate costs to specific functions and to determine, for example, a per pupil/served expenditure because of many confounding factors. It was even more difficult to determine a cost/benefit relationship.

The budgets of the project reflect both federal and local expenditure categories. In some projects, the cost of the project director is "charged" to federal, in others, to the local, and in still others, to both. Likewise, many other expenses are shared. Many of the local expenses are so called "in kind" expenses and are only estimated. This might include consumable supplies, use of duplication facilities and many other items that are difficult to maintain accurate cost data because of sharing with other school programs. In this respect, four broad classifications were established to allocate budgets for the 1972-73 school year. These classifications were:

1. Administration - salaries of project director, secretarial assistance, travel, etc.

2. In-service and Curriculum - In-service expenses of consultants, etc. and payments to teachers for curriculum writing workshops, etc.

3. Materials - This included teacher and student materials and such expenses as field trips for students.

4. Other - All other costs which could not be allocated to the above categories.

Since many assumptions were made in terms of the cost allocation, an approximate percentage distribution of the cost may be the most meaningful and is as follows:

TABLE 2.5

APPROXIMATE COSTS BY CATEGORY
(All Projects)

CATEGORY	% OF TOTAL COST
Administration	18%
In-service & Curriculum Writing	40%
Materials	22%
Other	20%
TOTAL	100%

The distribution of costs among sites varies considerably depending upon the emphasis of the projects. For example, in-service and curriculum writing ranged from less than 20%, to about 60% for individual sites. It should be noted that internal evaluation monies were not included in any of the categories as that effort was a separate contract with the RCU.

A next logical step might be to divide the monies allocated to specific functions, such as in-service, by the number of teachers served to determine an average in-service teacher cost. However, the variance in the in-service designs makes this type of cost computation somewhat meaningless. For example, most sites provided either one-half or a full day of in-service which could be easily accounted for in the cost calculation. However, in-service design for some projects was limited to small group in-service, groups of 15-30 teachers. Other designs served all of district teachers at a given function. Thus, the cost would vary greatly with the design. A more meaningful analysis of costs might be to project the costs to other districts given a hypothetical in-service plan. Given that there are a number of transportable products available from these projects, another district could estimate its costs as follows:

TABLE 2.6

HYPOTHETICAL INSERVICE COSTS ESTIMATE
PER TEACHER PER DAY

Item	Cost/Day/Teacher
1. Administrative planning	None (in kind)
2. Substitute teacher pay	$30.00
3. Consultant expenses including travel and preparation	7.50
4. Reproduction of Curriculum materials	5.00
5. Other	2.50
TOTAL	$45.00

The cost analysis assumes the following:

a. Administrative planning for the in-service, such as securing materials, consultants, substitutes, etc., is an "in kind" district expense.

b. That the major purpose of the in-service would be to review existing curriculum materials from other projects for revision and adoption to local needs.

c. That the in-service is conducted in groups of 20 teachers per consultant.

In observation of the eight delivery sites, the evaluation team believes that $45/teacher/day is a realistic cost. All projects expressed the need for extensive in-service and suggested that monies expended for this activity were well spent. Review of the materials available for the eight Minnesota sites as well as other demonstration sites around the country would suggest that resources might be more wisely expended in review of existing materials rather than in construction of new materials at least for an initial orientation of faculty to career education.

Another method of examining cost would be to determine the overall cost per student serviced. Thus, excluding the project which is in its first operational year, about 17,000 students were reportedly served. The average federal cost share per student served was about $60.00. This figure would represent 5-10% of the total educational expenditures for each student. The magnitude of this expenditure would also be considerably less than that of other special aid programs, such as Title I where per pupil expenditures generally reach several hundred dollars per student.

Another way in looking at these data is in terms of the cost per student instructional contact hour. The tables contained previously in this document report data on the number of teaching hours and number of students served. Utilizing this type of analysis the average cost per instructional contact hour is slightly less than $.16. This figure would, of course, be only federal costs and would not include basic teacher salaries, etc. Thus, if the average class size served by a career education activity were 30 students (in the project site, it was 33.8 students) the approximate cost would be $4.80/class hour. In transporting these types of programs to other schools, the costs could be reduced considerably if the following two assumptions were true.

1. The administrative costs would be an "in kind" expenditure of the district.
2. Basic direct costs to the LEA included only in-service and materials.

It should be emphasized that the cost calculation of this portion are based upon a number of assumptions and are tentative at best. The strategy employed by an LEA in implementing a career education program could alter the figures presented here considerably. However, the evaluation team feels that the figures are realistic estimates within the assumptions given. No cost/benefit analyses was attempted.

2.7 Review of Internal Evaluation

Evaluation in research and development projects is primarily a mechanism for maintaining and/or refocusing project goals and objectives. Particular descriptors such as internal-external, formative-summative are seen as parts of the whole and cannot be examined separately but must be viewed as factors within a time dimension that may produce varying reinforcements and/or modifications to a proje-t. The total evaluation process passes through different stages at given times. For example, periodically, there may be planning or design phases for evaluation strategies and activities which are to be carried out in succeeding months. Then there may be periods of data collection, analysis and redesign. In this way, the entire activity is viewed as a whole which provides information to project decision-makers as a supportive function to the overall project goals.

To determine the influence which the evaluation activities may have upon a project, it is necessary to document fully the activities which shaped the evaluation effort. These activities must highlight those decisions relative to the use of the evaluation information and the priorities placed on it, as well as the effect of the information on the subsequent decisions. The purpose of this portion of the third-party evaluation was to monitor the significant activities which formed the internal evaluation effort and to document the effect of this effort as a shaping mechanism and/or forcing function upon the project.

During the first year of operations (1971-72) each of the eight sites were charged with evaluation of their own activities and proposed outcomes. Since the budget of the projects relative to evaluation was small, limited results were obtained in this area. Subsequently, a decision was made to "pool" evaluation monies and to conduct internal evaluation activities through the RCU. Thus, virtually all evaluation, at least formalized evaluation, was assumed by the RCU.

Evaluation conducted by the project sites consisted of teachers evaluations of students on individual activities or units and formative feedback information from individuals to project management. Although this form of evaluation would be considered informal, no doubt significant decisions were made on the basis of this data. There was, however, no means of documentation of such, and decisions resulting from such were not "traceable". Evaluation activities during the first year of operation also consisted of formal site visits and reports by state department personnel. Thus, during the first year, formative evaluation of the project was accomplished through a combination of information, both internal evaluation and formalized feedback from the state department was utilized.

By pooling the resources during the second year, much greater depth could be undertaken in the evaluation effort. The RCU concentrated its efforts in two areas:

1. Teacher self-evaluation activity - gathering of data from teachers on teaching methods, effectiveness of methods, number of students served, etc.
2. Student Product Evaluation - This area included the development of career education tests for students in grades K-3, 4-6, and 7-9. These tests were primarily "aimed" at the cognitive area rather than psychomotor or affective domains.

2.7.1 Teacher Self-Evaluation (TSE)

The data gained from the TSE was designed to provide feedback information to teachers and project management as to the types of instructional strategies being utilized by teachers. Upon completion and analysis of this instrument, teachers and administrators could then review the methods being used in the classroom, the amount of time devoted to each, teacher perceived effectiveness of the method, the number of students served, and the career education objectives and content covered by the methods. Analysis was done by site, school, teacher, grade and curriculum area and could provide data across all sites by grade level, within schools by grade level, etc. Teachers were requested to complete the forms daily for each career activity for each class. Each form can contain 20 career activities.

The development of the TSE Instrument as well as the student Product Evaluation was and continues to be a part of the total Minnesota Career Education Exemplary Model. That is, the development of an evaluation system was and is one part of the model along with the eight delivery sites. The fact must be kept in mind as one examines the evaluation effort.

The content design of the TSE can be traced to documentation by the RCU concerning the rationale for a career education program. In that document, a model design was advanced. From this a more specific evaluation model was developed based upon a career education objectives matrix. The TSE instrument was a logical extension of this base for analysis of the delivery system. In examination of the development of the TSE instrument, the evaluation team found a logical set of sequential efforts. The development of the form and its analysis system did, however, meet with some problems and delays. In retrospect, the time schedule proposed for its development and production of feedback information did not allow for a number of problems encountered. This was evident from discussions with teachers and project personnel during the first round of site visits. Most, however, were understanding of the developmental delays and by the second site visit (May, 1973) the delay problem had generally been eliminated. However, a number of problems were discussed with LEA personnel relative to the instrument. The major areas of discussion were:

1. Clarity of the instrument form itself - teachers indicated problems with being able to follow lines and columns and to be sure that they were marking the correct column - the form requests much information and the response fields are closely packed. The RCU has responded to this problem by re-design of the form including spacing, shading and blocking. The new form design should correct any problems previously encountered and is available for use for the 1973-74 school year.
2. Instructions for completing the form. The RCU initially conducted a session with project directors as well as providing written instructions with the form. The evaluation team did not feel that instructions were a serious problem and that much of the discussion was simply due to misunderstanding and lack of familiarity with the instrument. These problems had substantially decreased by the second round of site visits.
3. Time required for completion of the form. This criticism was generally discounted by the evaluation team as a reaction to an additional task and some confusion which related to the form and directions. Data obtained from the TSE form would suggest that it was not that time consuming. In total, over 10,000 activities were recorded. Table 2.7 presents a distribution of the time required for completion of the form for each activity. Nearly half (48.7%) of the time the recording process required less than three minutes of teacher's time per activity. Nearly 500 teachers (498, according to the RCU data) participated in career education activities.

This would average out to be about 20 activities per teacher per year. At an average completion time of 3 minutes/activity, about one hour of time would be involved for the average teacher during the school year for completion of the TSE forms. This does not appear to be an excessive amount of time.

TABLE 2.7

TIME DISTRIBUTION FOR COMPLETION OF THE TSE FORM

Time	Percentage
Less than 3 minutes	48.7
3 - 6 minutes	37.9
More than 6 minutes	13.4

4. Accuracy of Data. Many teachers indicated that they did not complete the form daily and that at the end of a week or a month recall of activities was difficult. This problem is difficult to solve other than to try and impress upon the teachers that their assistance is needed. Possibly a weekly collection schedule by project directors would help to increase promptness.

5. Timely analysis of the data. The analysis program met with unexpected delays and feedback information was late in arriving. However, at this time, the programs are fully operational and no substantial delays should be encountered during the next year.

6. Utility of the feedback information. Some teachers questioned the usefulness of the information both to them and to project directors. Project directors, however, were supportive of the information utility.

It cannot be realistically expected that all teachers will agree with the utility of the information. Some additional in-service activities related to this area could help many teachers understand and utilize the feedback information.

The TSE form also collected data relating to career education objective/ content area being taught by teachers. Table 2.8 contains information collected by the RCU for a number of objective/content areas. Seven different areas from "Self Awareness" to the "Planning Process" were analyzed. Frequencies are presented for each of the seven operational projects with summary data presented for the three project groups. If one examines the percentage distribution of objective/ content within each of the seven areas and compares the distribution by community grouping, a substantial amount of similarity is found. For example, for the area, "Work Roles: Workers:, the percentage distribution of the frequencies for "Needs and Satisfaction", "Mental-Physical Abilities" and "Educational Needs, Goals", have a 1-2-3 ranking in each of the community groupings.

Table 2.9 presents a condensation of these data in Table 2.8 as they relate to the most frequently taught objective/content for each of the seven areas. As can be seen from these data, except for the area of "Occupational Area" and "Work Roles: Requirements", all three project groupings have given primary emphasis to the same objective/content area. These data would suggest that although the community characteristics of the project sites differ, there is either by design or circumstance a very similar concentration of objective/concepts in each type of site.

Further examination should be made by the project sites and the DVTE as to the emphasis of objective/content within given areas. Within some areas, a generally uniform emphasis of objective/content is being applied whereas in other areas a considerable variance is shown.

TABLE 2.8

FREQUENCIES AND PERCENTAGE OF RESPONSE TO CAREER EDUCATION OBJECTIVES AND CONTENT: IN THE AREAS OF: GENERAL WORK ROLES, OCCUPATIONAL LEVELS, AND WORKER WORK ROLES.

AREAS	SUBURBAN SITES				INDUSTRIAL AGRICULTURE SITES						AGRICULTURE	
	OSSEO	ROSEVILLE	AVER.		CLOQUET	OWATONNA	RED WING	WILLMAR	AVER.		PLAINVIEW	
SELF AWARENESS B	F	F	F	%	F	F	F	F	F	%	F	%
Mental Physical Abilities	105	149	127	18.4	106	1114	1328	179	681.8	20.4	350	21.8
School and Work Abilities	93	134	113.5	16.4	122	743	984	153	500.5	15.0	258	16.1
Personality, Attitudes	102	211	156.5	22.5	91	1161	1384	215	712.7	21.3	271	16.9
Educational Needs, Goals	103	152	127.5	18.4	120	722	1270	257	592.3	17.7	283	17.6
Occupational Needs, Goals	112	222	167	24.2	175	1181	1740	340	859.0	25.6	442	27.6
TOTALS	515	868	691.5	100%	614	4921	6705	1144	3346.3	100%	1604	100%
WORK ROLES: GENERAL												
Importance of Work	133	263	198	37.0	116	1352	1622	385	868.8	32.[illegible]	385	33.0
Socio-economic Impact	39	81	60	11.2	39	627	722	138	381.5	14.[illegible]	173	14.8
Change in work roles	49	74	61.5	11.5	47	475	629	114	316.3	12.0	165	14.1
Kinds of careers	111	320	215.5	40.3	207	1563	2221	304	1073.7	40.7	445	38.1
TOTALS	332	738	535	100%	409	4017	5194	941	2640.3	100%	1168	100%
OCCUPATIONAL LEVELS												
Professional and Technical	47	139	93	23.5	74	1001	1269	271	653.8	26.4	351	27.3
Managers and Owners	27	69	48	12.2	50	474	492	124	285	115	150	11.7
Clerical	42	58	50	12.7	129	417	626	56	307	12.4	156	12.2
Sales and Service	39	68	53.5	13.5	87	509	844	101	385.3	15.5	171	13.3
Craftsmen	33	90	61.5	15.6	59	525	715	102	350.3	14.1	167	13.0
Operatives and Laborers	43	135	89	22.5	60	869	832	238	499.8	20.1	289	22.5
TOTALS	231	559	395	100%	459	3795	4778	892	2481	100%	1284	100%

	OSSEO	ROSEVILLE	AVER.		CLOQUET	OWATONNA	RED WING	WILLMAR	AVER.		PLAINVIEW	
	F	F	F	%	F	F	F	F	F	%	F	%
WORK ROLES: WORKERS B												
Mental-Physical Abilities	94	128	111	30.3	77	1005	1245	236	640.8	34.6	242	33.0
Needs and Satisfaction	110	195	152.5	41.7	124	1067	1383	274	712	38.4	275	37.5
Educational Needs, Goals	87	118	102.5	28.0	124	567	1091	224	501.5	27.0	216	29.5
TOTALS	291	441	366	100%	325	2639	3719	734	1854.3	100%	733	100%
OCCUPATIONAL AREA C												
Construction	25	113	69	9.8	71	498	587	117	318.3	7.0	194	8.3
Manufacturing	33	81	57	8.0	47	524	666	93	832.5	7.3	191	8.1
Natural Resources	27	66	46.5	6.6	21	561	618	170	342.5	7.5	173	7.4
Transportation	24	94	59	8.3	26	569	591	144	332.5	7.3	171	7.3
Marketing and Advertising	34	65	49.5	7.0	64	456	686	111	329.3	7.2	157	6.7
Communications	78	62	70	9.9	44	655	811	189	424.8	9.4	250	10.7
Government & Finance	19	56	37.5	5.3	25	355	398	90	217	4.8	120	5.1
Public Utilities	11	49	30	4.2	10	302	457	105	218.5	4.8	123	5.2
Education and Research	23	71	47	6.6	18	513	691	166	347	7.6	144	6.1
Health and Welfare	35	80	57.5	8.1	31	643	714	129	379.3	8.4	179	7.6
Recreation	34	42	38	5.4	44	439	542	95	280	6.2	140	6.0
Arts and Recreation	25	54	39.5	5.6	41	328	660	126	288.8	6.4	148	6.3
Personal Services	35	85	60	8.5	43	752	787	180	440.5	9.7	207	8.8
Consumer and Homemaking	33	62	47.5	6.7	49	495	523	93	290	6.4	149	6.4
TOTALS	436	980	708	100%	534	7090	8731	1808	4540.8	100%	2346	100%
WORK ROLES: REQUIREMENTS												
Ability Requirements	120	168	144	33.0	128	1060	1505	296	747.3	31.0	319	29.2
Educational Requirements	88	122	105	24.1	108	666	1149	254	543.3	22.5	220	20.2
Working Conditions	97	174	135.5	31.1	94	1169	1511	295	767.3	31.8	380	34.8
Employment Policy and Demands	44	59	51.5	11.8	76	502	743	102	335.8	14.7	172	15.8
TOTALS	349	523	436	100%	406	3393	4908	947	2413.5	100%	1091	100%
PLANNING PROCESS												
Relat. Work to Non-work roles	55	59	57	17.0	66	634	769	138	401.8	18.2	173	18.5
Need for career planning	42	71	56.5	16.9	74	537	903	175	422.3	19.2	177	18.9
Processes of career planning	20	26	23	6.9	22	201	395	171	197.3	9.0	76	8.1
Locating & Using Information	69	61	65	19.4	57	450	584	135	306.5	13.9	173	18.5
Career & Educ. Opportunities	49	128	88.5	26.4	85	831	1259	213	597	27.1	244	26.1
Educational Role in Planning	41	49	45	13.4	57	347	608	96	277	12.6	91	9.7
TOTALS	276	394	335	100%	361	3000	4518	928	2201.8	100%	934	100%

TABLE 2.9

MOST FREQUENT TAUGHT OBJECTIVE OR CONTENT

AREAS	SUBURBAN SITES	INDUS-AGRI. SITES	AGRI. SITE
Self Awareness	Occupational Needs, Goals (24.2%)	Occupational Needs, Goals (25.6%)	Occ. Needs, Goals (27.6%)
Work Roles: General	Kinds of Careers (40.3%)	Kinds of Careers (40.7%)	Kinds of Careers (38.1%)
Occupational Levels	Professional & Technical (23.5%)	Professional & Technical (26.4%)	Professional & Technical (27.3%)
Work Roles: Workers	Needs and Satisfaction (41.7%)	Needs and Satisfaction(38.4%)	Needs and Satisfaction (37.5%)
Occupational Area	Communications (9.9%)	Personal Services (9.7%)	Communications (10.7%)
Work Roles: Requirements	Ability Requirements (33.0%)	Working Conditions (31.8%)	Working Conditions (34.8)
Planning Process	Career & Educational Opportunities (26.4%)	Career & Educational Opportunities (27.1%)	Career & Educa. Oppor. (26.1%)

For example, in the Suburban Site group, for the area of "Self Awareness", a variance of from about 16% to 24% is noted among the different objective/content area while for the area of "Work Roles: General", the range is from about 11% to 40%. Again examination should be made as to the basis for this variance; was it by design or by circumstance.

2.7.2 Student Product Evaluation (SPE)

The SPE efforts completed by the RCU consisted of development of test devices to measure cognitive achievements of students in grades K-9. Three separate instruments were developed for grades K-3, 4-6, and 7-9. The K-3 instrument based items upon pictorial representations.

From national statements about career education, a contextual framework was developed for the tests. This was further refined into a matrix and procedures for generating test items by the RCU. Tentative items were then produced in accordance with this procedure and a pilot test was completed. Results of the pilot testing, which included a sample of about 4,000 students, were then used in refinement of the final instruments. Complete documentation of this effort is currently being finalized by the RCU. In review of the draft documentation and through interviews with LEA, DVTE and RCU personnel, the evaluation team concludes that a very systematic process was followed throughout the developmental stages.

The instruments were used in an experimental-control testing situation during May, 1973. Generally, the classroom (building(s) which had teachers reporting activities with the TSE were considered experimental while other classrooms (building(s) within the district were considered control. Where an entire district was involved, (considered experimental), other "similar" districts were selected as control. The RCU conducted in-service sessions for test proctors other than the regular classroom teachers. In general, the preparations for the testing were substantial and proved very adequate. The evaluation team was present at a number of sites during the actual testing and observed little, if any, difficulty with the testing process. At that time, the evaluation team interviewed teachers and project directors relative to the testing efforts. The following represents some of the major topics discussed:

1. Testing procedures were effectively planned and well implemented. Nearly everyone interviewed agreed in this matter.

2. The quality (visibility) of a number of the picture reproductions in the K-3 test was considered marginal by some teachers.

3. The appropriateness (difficulty) of the language of the K-3 test was considered marginal by some teachers.

4. The difficulty of specific items on the K-3 test was also questioned. However, this appeared to be more of an individual situation probably related to the topics teachers had been teaching during the year.

5. The appropriateness of the test battery itself was questioned as it related to the goals and objectives of some of the projects. For this area, differences were found generally by project rather than by teachers. At least two of the projects raised serious questions regarding the test's appropriateness. They indicated that the test was structured toward the cognitive areas while their project emphasized the affective areas. However, it should be recalled that the SPE test was by design a cognitive instrument and it should also be noted that by design, the projects vary in their emphasis of cognitive and affective domains. When these facts were discussed, the appropriateness of the test was viewed in relationship to the project and it was generally concluded that the test was appropriate for the cognitive domain.

In review of very preliminary results of the SPE test, there was apparently little, if any, difference between the experimental-control groups. If this fact is substantiated by further analyses, it could well be for the following reasons:

1. The experimental-control design was confounded with a number of factors. The level of career education activities of teachers varied considerably. It is quite possible that many control teachers actually conducted as many, if not more, activities as experimental teachers.

The assumptions that similar communities provided adequate control groups may not be justified. The current national and state emphasis upon career education makes its restrictions to eight localized sites questionable.

2. The test may not be measuring the full impact of the projects since the test was designed to measure the cognitive domain only.

3. The intervention model, teaching strategies, amount of resources devoted, etc., was ineffective.

4. The test itself was inappropriate.

In the opinion of the evaluation team, items #1 and #2 would be the major factors in the lack of obtaining measurable differences in the experimental-control model. As additional analysis are completed, this hypothesis may be further substantiated. In general, however, the centralization of the evaluation efforts through the RCU should realize substantial returns in terms of data available to decision makers.

2.8 Review of Internal Documentation and Transportability.

The purpose of documenting is to produce written instruments of communication conveying a series of hypotheses and operations of the project. In general, a project's documentation is all the written correspondence, reports, papers, etc., that are products of the efforts of the project. A project's documentation is the direct reflection of the project, and to be viable a project must present a consistent and accurate "picture" of itself, its goals and objectives and its results. The documentation of a project is not just a means to communicate information to the outside world, but, as important, to serve as the media for the retention and communication of ideas, findings and processes, etc., within the project itself.

Transportability refers to the identification and potential replication of operations, practices, techniques, etc., from one activity to another or from one school district to another. In assessing transportability, there are many dimensions for consideration.

A frequent problem in the transportability of a model's activity is the sense of immediacy of conclusions which are demanded. The longitudinal aspects of a model dealing with attempts at social intervention make the immediate appraisal of transportable components difficult and may interfere with the overall model's goals. A premature conclusion or one that may disrupt the environmental context of a model may be as detrimental to model replication as no conclusion at all. This factor must be carefully weighed before feedback is widely disseminated.

In assessing transportability, various considerations must be addressed. For example, it would be ideal to "transport" a model to a similar context. However, this situation rarely, if ever, exists. Realistically, relevant model functions are extracted which will "fit" the new environment. Also, in some instances, a pre-intervention function is required to prepare the new environment for the incoming model. This is a problem which must be addressed within the contextual factors influencing transportability.

2.8.1 Documentation

Documentation could be divided into a number of areas. These would include at least: (1) Project process documentation; (2) project product documentation; (3) RCU evaluation effort documentation. Each of these areas is discussed below:

1. Project process documentation: In examination of this area minimal formalized documentation was found. The processes employed by the eight project sites were initially documented in their proposals together

with a revision of their objectives. However, modifications have been made and success levels may be different among the various objectives proposed. There is a general need to expand the area of process documentation within projects and to revise documentation related to project objectives.

2. Project Production Documentation: All project sites have documented products in the form of resource guides, curriculum materials and the like. The quality and quantity vary among sites but, generally, documentation is adequately being provided for in this area.

3. RCU evaluation effort documentation: The RCU has and is in the process of providing substantial documentation for its' evaluation efforts. Currently, this documentation is in the process of revision and, upon completion, should prove very sufficient. The evaluation team did not review supportive documentation describing the development of the TSE instrument and suggests inclusion of this aspect with other RCU documentation. Supportive documentation on the SPE instrument was reviewed and is in the process of being finalized.

2.8.2 Transportability

The Minnesota Model has produced two areas of clearly identifiable transportable elements with a third as a possibility. The first two are the products of the eight sites and the evaluation devices. Documentation is sufficient for these products to be easily examined and understood by potential users. However, some of the products of the sites may be restricted to locality. For example, resource guides listing community personnel, etc. would not be directly usable in another community. However, curriculum materials should be generally applicable.

The evaluation devices constructed by the RCU should also be widely transportable. Applicability to situations will determine their direct utility. For example, the instrumentation presently available will be limited to teacher evaluation and cognitive student performance. The basis for construction of these instruments was sufficiently broad that usability should not be restricted to local or regional use. Further, complete analysis programs are operational.

The third area, that of transportability of the process, may be limited. The specific processes varied somewhat among the sites and little formalized documentation of these processes is in existence. The transportability of this element will probably have to be accomplished through direct personnel contact.

SECTION III. RECOMMENDATIONS

The major goal of this study was to conduct a third-party evaluation of the career education model being utilized by the Minnesota State Department of Education, Division of Vocational-Technical Education. The evaluation concentrated upon the following eight areas: (1) design, 2) context, 3) management, 4) instruction, 5) information, 6) costs, 7) internal evaluation and 8) documentation and transportability. The major recommendations related to each of these areas are presented below.

3.1 Design

A. ESTABLISH IN ADVANCE AND COMMUNICATE SPECIFIC CRITERIA FOR EVALUATION OF AGENCY PROPOSALS.

The state plan for vocational education specifies areas for proposal evaluation and evidence indicates that the Division of Vocational-Technical Education followed this plan very closely. However, there remains a need to specify specific criteria in advance; i.e., "weightings" of factors which will be utilized in judging proposals. Likewise, provisions should be incorporated which will permit schools which are at an inherent disadvantage on certain factors (facilities, size, location, etc.) to have their special needs considered.

B. CONTINUE THE MULTI-SITE MODEL.

Acceptance bv the limited sample of the educational community examined by this study resulted in high acceptance of the multi-site vs. a single-site model; i.e., multi delivery sites. Evidence of problems encountered in the instructional process also suggests that a single delivery site model may not have had opportunity to experience such a broad variety of needs as that encountered by a multi-site delivery model. If a geographical criterion was utilized in selection of sites, the Division of Vocational-Technical Education should give consideration to a site in northwestern Minnesota as that area of the State does not have a current operational exemplary career education project.

C. PROJECT DESIGN AND IMPLEMENTATION SHOULD EMPHASIZE INSERVICE TRAINING.

Most individuals interviewed expressed the need for substantial in-service activities for teachers and administrators.

There was considerable evidence that the greater the teacher in-service, the greater the amount of career education activities conducted both inside and outside the regular classroom.

D. THERE EXISTS A NEED TO REVIEW GOALS AND OBJECTIVES TO DETERMINE CURRENT RELEVANCE.

The listing of goals and objectivesin the original proposals have been revised. However, project evaluation has dictated some changes since that time. A current review of goals and objectives would offer additional documentation as to the processes of these projects for other LEA's anticipating similar ventures.

3.2 Context

A. THE"CENTERING"OF CAREER EDUCATION IN THE DIVISION OF VOCATIONAL-TECHNICAL EDUCATION AT THE STATE LEVEL AND IN VOCATIONAL DEPARTMENTS AT THE DISTRICT LEVEL SHOULD BE EXAMINED.

According to many conceptual thoughts, vocational education is a part of career education and not the reverse. The administration of career education through the vocational departments both at the state and local level have given a "vocational" identity to career education and many educators see career education as part of a vocational program and not as a broad, integral part of the total curriculum.

B. THE PRIORITY OF CAREER EDUCATION AFFORDED AT THE STATE LEVEL SHOULD BE CONSIDERED.

Perception by many District personnel, especially administrators, was that verbally the State Department has given career education a high priority but,action wise, the priority is apparently much lower. Generally, LEA administrators were complimentary of the efforts of the Division of Vocational-Technical Education to further career education but critical of other divisions of the State Department for their apparent lack of placing career education as a high priority item.

C. THE RESPONSIBILITY OF THE COMMUNITY AND SCHOOL FOR THEIR PARTS IN THE CAREER EDUCATION PROGRAM VARIES WITH COMMUNITY CHARACTERISTICS AND SHOULD BE "ACCOUNTED" FOR IN FUTURE PROGRAMS.

The eight delivery sites have developed a program of shared educational responsibility between the school and the outside community. However, because of community characteristics, size, occupational information, etc., generally smaller districts (located in smaller communities) must assume an increasing responsibility for developing educational experiences which might normally be found in and assumed by the larger communities.

3.3 Management

A. THE PROJECT DIRECTOR SHOULD BE ASSIGNED TO THE POSITION AT LEAST HALF-TIME.

Access to the project director is a very important factor in the success of the project. The project director must have time and a schedule that permits him to be in personal contact with teachers.

B. ENDORSEMENT OF CAREER EDUCATION SHOULD COME FROM TOP LEVEL LINE ADMINISTRATORS AT THE DISTRICT LEVEL.

The priority of career education in a district as perceived by teachers is a direct function of the "visible" commitment given to it by top level administrators. In some instances, other very worthwhile programs compete for top level endorsement and it is difficult to establish a perceived high priority need for career education.

C. THERE IS A NEED TO REVIEW THE FUNCTION OF COMMUNITY STEERING COMMITTEES.

Many committees have been nearly inactive and their contributions to career education is questionable unless their function becomes more meaningful.

D. THERE IS A CONTINUED NEED FOR REVIEW OF GOALS AND PROGRESS OF THE PROJECT ON A PERIODIC BASIS WITH TEACHERS.

This recommendation relates closely to (a) above as continuous communication is needed between project management and teachers.

E. CONSIDERATION SHOULD BE GIVEN BY THE DIVISION OF VOCATIONAL-TECHNICAL EDUCATION TO FUNDING PROJECTS ONLY IF THEY IMPLEMENT A K-12 DELIVERY SYSTEM. Closely related to this recommendation is the fact that implementation of career education has encountered considerably more problems at the secondary level. In this respect, some projects have concentrated greater resources at the elementary level than at the secondary level, and the Minnesota Model has shown a much lesser extent of activity and products at the secondary level.

3.4 Instructional

A. THERE REMAINS A CONTINUED NEED TO MAXIMIZE COMMUNICATION AMONG THE PROJECT DIRECTOR, TEACHERS, ADMINISTRATION AND THE COMMUNITY.

This is a "common sense" recommendation and relates closely to recommendations (a) and (d) of 3.3, above. Access to the project director is vital for communication.

B. THE INSTRUCTIONAL PROGRAM, ESPECIALLY AT THE SECONDARY LEVEL NEEDS MORE INVOLVEMENT AND "VISIBLE" COMMITMENT FROM PRINCIPALS.

Support of the program by principals is a vital factor in its success since teachers are directly responsible to the principal, the "tone" set by the principal is a significant factor in influencing teacher activities.

C. THE VALUE OF FIELD TRIPS AS THEY CONTRIBUTE TO THE PROGRAM SHOULD BE EXAMINED.

Most projects have utilized field trips extensively. Teachers and administrators generally report very favorable results. At least one project site has a district policy limiting the use of field trips and this limitation should be reviewed in light of the apparent success of field trips for other projects.

D. AN EXTENSIVE REVIEW OF THE TEACHER SELF EVALUATION AND STUDENT PRODUCT EVALUATION RESULTS SHOULD BE CONDUCTED.

This review should involve teachers and administrators and be related to the general direction of the career education program of the district. The outcome of the review should provide a firm strategy for career education in the district.

3.5 Information

A. THERE SHOULD BE A SYSTEM FOR THE "AUTOMATIC" EXCHANGE OF CURRICULUM MATERIALS, RESOURCE GUIDES, ETC. AMONG THE PROJECT SITES. This might be accomplished with mailings but probably a better method would be through the directors' meetings. Very positive reaction was given to the utility of the directors' meetings.

B. MORE VISITATION TO PROJECT SITES BY DIVISION OF VOCATIONAL-TECHNICAL EDUCATION PERSONNEL SHOULD BE CONDUCTED. Both project directors and other administrators felt that greater contact at the local level by state department personnel would help to further their communications with the DVTE as well as assisting the LEA in dissemination of project information at the state level.

C. AS A CONDITION OF PROJECT FUNDING, THE DISTRICT SHOULD AGREE TO A GIVEN NUMBER OF MAN DAYS FOR DISSEMINATION WITH THE DIVISION OF VOCATIONAL-TECHNICAL EDUCATION. The Division of Vocational-Technical Education and the Districts receive frequent requests for individuals to present information about the activities of project sites. In some instances, requests have become a burden upon District personnel, especially some projector directors. If as a condition of acceptance of funding, the District and the Division could agree that a certain number of man days would be available for this effort through the joint approval of the District and the Division, many scheduling problems could be avoided. Closely related is an examination of District personnel practices in regard to local district policies for acceptance of money received for speaking engagements if such conflict with normal district employment policies.

3.6 Costs

A. BUDGET RESPONSIBILITY AND APPROVAL SHOULD REST WITH THE PROJECT DIRECTOR.

This matter is especially critical when one considers material requests. These requests should be channeled through the project director rather than, or at least in addition, to the principal and business office.

B. UNIFORM BUDGET AND COST CATEGORIES SHOULD BE ESTABLISHED.

If comparable cost data is to be obtained for each project, there is a need to establish uniform definitions. Currently, each project submits a budget according to its own categories and comparability is difficult. Instructional costs (federal money only) were about $.16 per instructional contact hour or about $4.80 per class hour (30 students). The average cost to serve a student was about $60 per year. This included administrative, inservice, materials, and other costs, but no local "in kind" expenditures. Cost projections were difficult and tentative at best and the reader is referred to Part 2.6 of this document for a further discussion and qualifications of the above statements.

3.7 Internal Evaluation

A. CONTINUE TO POOL INTERNAL EVALUATION RESOURCES.

The monies devoted to internal evaluation produced several transportable evaluation instruments and analysis procedures. The

The quality control applied to development and implementation of this effort realized substantially greater returns than during the first year when each project was responsible for its own evaluation. Only a coordinated approach to the evaluation process such as that conducted by the Research Coordinating Unit at the University of Minnesota could have produced the in-depth evaluation instruments and processes.

B. DEFINE THE AREA OF INTERNAL EVALUATION ACTIVITY FOR 1973-74.

In 1972-73 efforts concentrated upon Teacher Self Evaluation and Student Product Evaluation. Greater depth was accomplished in each of these areas than if projects had been responsible for evaluation on an individual basis. However, whenever efforts are concentrated upon one or two areas generalized appropriateness to all eight sites was reduced and there is a need to review and determine internal evaluation priorities.

C. REVIEW THE UTILITY OF THE TEACHER SELF EVALUATION.

The data generated by this process should be put to greater use by teachers and project directors in planning and implementing career programs or the process should possibly be discontinued. In-service activities with teachers and the fact that feedback information in this area will be readily available this year could contribute to greater usefulness during the upcoming year.

D. THE MAKEUP OF THE EXPERIMENTAL AND CONTROL GROUPS SHOULD BE EXAMINED.

Preliminary results indicate that no significant difference was observed between the two groups. In review of the evaluation design, the evaluation team feels that considerable confounding may be present in the two groups as explained in Section 2.7 of this document.

E. INVOLVE THE LOCAL COMMUNITY IN THE EVALUATION PROCESS.

Career education is a shared responsibility between the schools and the community and either the internal evaluation effort or the third-party evaluation effort should gather data from the community.

3.8 Documentation and Transportability

A. THERE IS A NEED TO IMPROVE PROJECT PROCESS DOCUMENTATION.

The evolutionary aspects of a project can be very useful to other districts contemplating such ventures. Currently, minimal process documentation is available and responsibility for such has not been clearly established.

B. THERE IS A NEED AT THE STATE LEVEL TO COORDINATE CURRICULUM MATERIALS PRODUCED BY THE PROJECTS FOR STATE-WIDE DISSEMINATION.

Each of the project sites have produced various curriculum materials and have disseminated those to varying degrees. The state department has disseminated on a state-wide basis materials from one site. However, there remains a need to examine all materials produced by the eight sites and eliminate duplication, index, remove localization of materials, etc., and disseminate as a total product both within Minnesota and other states.

C. IMPRESS UPON INSTITUTIONS OF HIGHER EDUCATION THE NEED FOR CAREER EDUCATION TRAINING PROGRAMS.

A number of the project sites have made arrangements with higher education institutions for in-service courses usually located at the project site. Teacher reactions would suggest that some form of career education training should be part of every teacher preparation program.

APPENDIX A

APPENDIX A CONTAINS A CONDENSATION OF THE QUESTIONS ASKED OF VARIOUS INDIVIDUALS DURING THE TWO ROUNDS OF SITE VISITS. QUESTIONS WERE DIRECTED AT PROJECT DIRECTORS, SUPERINTENDENTS, PRINCIPALS AND RANDOMLY SELECTED TEACHERS AND WERE ASKED VIA PERSONAL CONTACT BY A MEMBER OF THE EVALUATION TEAM.WITH EXPLANATIONS AND DISCUSSION PROVIDED BY THE INTERVIEWER.

THIRD PARTY EVALUATION OF THE CAREER EDUCATION MODEL

FIRST SITE VISIT INTERVIEW STRUCTURE

PROJECT DIRECTOR

1. Review of proposal; noting goal statement and changes of emphasis.
2. List or extract from proposal the products to be generated and timeline.
3. Obtain and review any evaluation of the project - including State Department visitation reports and correspondence.
4. What type(s) of service is being offered?
5. How are these programs affecting students?
6. What evidence do you have (or will you have) relative to student-centered outcomes?
7. How did you determine the inservice needs of the teacher?
8. What type of inservice was provided?
9. What is your perception of teachers' reactions to:
    1) Inservice
    2) The project in general
    3) The RCU
    4) The State Department
10. What is your personal assessment of the success of:
    A. The Project
    1) Curriculum development
    2) Budget control
    3) Communication
    4) Staffing quality
    5) Facility appropriateness
    6) Products
    7) Student evaluation
    B. The RCU's efforts to evaluate the project.

SUPERINTENDENT (or other district level administrator)

1. How does this project relate to the goals and objectives of your own school district?
2. How will your project serve as a demonstration model to other districts?
3. The State Department of Vocational Education has chosen to fund several projects (smaller financial support to each project), vs. one project (greater funding to a single project). What is your reaction to this decision?
4. What is your personal assessment of:
    A. The Project
    B. The RCU's efforts to evaluate the project
5. Do you feel that the project has been well communicated at all levels?

PRINCIPAL

1. How do the goals and objectives of this project relate to the learning goals of the district and of your own building?
2. What is the perception of your teachers relative to the impact and value of the project?
3. What problems has your school encountered in implementing the project?
4. What successes can you identify as a result of the project?
5. Do you feel that the project has been well communicated at all levels?

TEACHER

1. In what ways have you been involved with the implementation of the project?
2. During your daily contacts with students, how are you "delivering" the goals and objectives of the project?
3. How much of an impact have you (and the project) had upon students?
4. The RCU is conducting an evaluation of each project. What contact have you had with the evaluation effort and what impact do you see the evaluation having?
5. Do you feel that the project has been well communicated at all levels?

THIRD PARTY EVALUATION OF THE CAREER EDUCATION MODEL

SECOND SITE VISIT INTERVIEW STRUCTURE

1. How were teachers involved: (1) Did size of school make a difference; (2) Did freedom of Director make a difference?
2. How should the Project Director be selected? Who should he be? Who is most likely to succeed?
3. What is the effect of in-service training? Does it make a difference? Does it get teachers involved?
4. What do administrations feel the value of the project should be for the future?
5. Do you know of strategies which are most likely to work? Initiating project? Involving teachers? Motivating students?
6. What kind of report formats do you view as important?
7. What is your appraisal of the RCU's efforts? How can the RCU improve? Have you changed your approach because of these reports?
8. Do the projects have a self-increasing effect?
9. What are the goals and objectives which you are "delivering" to students?
10. How much of an impact have you (and the project) had on students?
11. How were classrooms selected for experimental and control groups? Random? What students were chosen and how?
12. Are students likely to be instructed in two different places and tested as being in one?
13. How many students are in each group?
14. How will tests be scheduled?
15. How can you get percentile ranks for I.Q. and Achievement tests?
16. What Norm. will you use?

CHECKLIST

1. List of products and processes
   A. Workshops and in-service
      1) Number of teachers served
      2) Amount of time spent by teacher
   B. Curriculum materials - manuals, etc.

APPENDIX A (Continued)

2. Number of teachers and students served

Grade	# of Students	# of Teachers
K through 12	K through 12	K through 12

3. Federal money spent on:

A. Administration	$
B. In-service	$
C. Materials	$
D. All Other	$
TOTAL	$

A SYSTEM FOR EVALUATING CAREER EDUCATION
IN MINNESOTA: 1972-1973

A Final Report

Submitted to the
State Department of Education
Division of Vocational and Technical Education
Capitol Square Building
St. Paul, Minnesota

Prepared by
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Minnesota Research Coordinating Unit
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The members of the staff of the Minnesota Research Coordinating Unit for Vocational Education and the Division of Vocational and Technical Education, State Department of Education wish to take this opportunity to express their appreciation to three groups of individuals who participated and/or cooperated in the conduct of these evaluation studies.

First, we wish to recognize the cooperation that students, teachers, and directors in the exemplary projects demonstrated by providing the data used to develop this report. While it is not possible to list all of the individuals in the exemplary projects, we would at least like to recognize the directors of each of the eight exemplary projects: Donald Barber, Owatonna; Robert Olsen, Osseo; Pete Martens, Red Wing; Jerry Johnson, Plainview; Donald Kellen, Willmar; Dale Abbott, Cloquet; Vernon Vick, Roseville; Ronald Johnstone, White Bear Lake.

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It is anticipated that more than 20,000 individuals participated in and devoted considerable amounts of time to the evaluation project. It would not have been possible to develop and operate the evaluation system without this type of professional contribution.

ABSTRACT

Introduction

The state of Minnesota used its funds designated for career education to support eight (8) school districts in the implementation of career education. Each school district proposed a different way to implement career education. The purpose of this report is to present and discuss the findings of the first year's evaluation of seven of the participating projects as they relate to (a) the processes teachers and project directors used to implement career education and (b) the impact that career education instruction had on the cognitive achievements of students.

The Minnesota Research Coordinating Unit for Vocational Education designed and operated a system of formative and summative evaluation to assess the processes used to implement career education as well as assess the impact that career education instruction had on students in grades 1-9. The findings of the study are presented and discussed separately for the formative (Part I) and summative (Part II) evaluations. These sections are followed by a general discussion of both sets of findings (Part III).

Formative Evaluation of Instructional Processes

Two self-evaluation forms were developed to obtain information from and provide continuous monthly feedback to the project directors and participating teachers in each of the seven exemplary projects concerning the processes they used to implement career education. The project directors reported the type and amount of support activities conducted each month and received a cummulative summary of these activities from the Minnesota RCU. Each participating teacher "described" the type and amount of time spent on career education instruction conducted each month using a specially designed form set up for optical scanning and computer analysis. A one page, computer summary report of these instructional activities was provided to teachers and project directors periodically during the academic year. The purpose of these data was (a) to obtain baseline information about the methods used to implement career education and (b) to detect differences that may exist among the seven projects in terms of implementation strategies.

Based on the data provided by project directors and teachers for a seven month period, the processes used to implement career education in the exemplary projects may be described in the following manner:

1. On the average, a project director devoted about seventeen percent of his time to administering, supervising, and planning career education activities. These activities included (a) attending and making presentations at twenty local, state, and national meetings, (b) preparing and distributing about eighty different pieces of promotional information about career education, (c) providing inservice training for about 350 teachers, (d) purchasing and developing about 300 different curriculum or instruction materials, and (e) organizing career guidance services for 450 teachers and 3200 students.

2. Teachers, on the average, spent about three percent (2.43%) of their time (about seven hours a month or 1.5 hours per week) conducting twenty (20) separate activities related to career education that (a) were integrated with their regular course content, (b) consumed (on the average) about thirty-five (35) hours of instruction and preparation time, and (c) emphasized three major concepts related to career education (self-awareness, occupation industries, and work roles) and (d) utilized a range of instructional techniques to implement career education. The most frequently used techniques were those that could most readily be used in a classroom (e.g. A-V presentation, presentation-discussion, workers in class, career games, etc.).

The instructional profile described is based on data obtained from all participating teachers and, as such, represents the average profile. Additional analysis of the data showed that each exemplary project differed considerably in terms of the way in which career education was implemented.

Some of the largest differences in instruction were in terms of: (a) The type and amount of emphasis on support services (e.g. counseling, in-service training, and promotional activities, etc.), (b) the number of instructional activities conducted, (c) the amount of instruction and preparation time devoted to career education, (d) the frequency with which instructional techniques were used, and (e) the amount of instructional time devoted to various instructional techniques. It was apparent that teachers within each project used a wide range of instructional techniques which were integrated with their regular course content to implement career education, but it was also apparent that teachers placed less instructional emphasis on the concepts of work requirements, career decision making and occupational levels than they did on other areas of content.

It may be concluded that the seven exemplary ways projects did, in fact, implement career education in different ways; they utilized different instructional techniques, they differed in the average number of activities conducted, and they distributed the amount of instruction and preparation differently among the activities conducted. It remains to be seen whether these instructional differences have a differential impact on the subsequent achievements of their students.

Summative Evaluation of Student Achievement

Students in both experimental and control groups were administered specially developed career education tests designed to assess the impact of career education on their cognitive achievements. Experimental and control groups were identified by the project directors or by principals of schools, as groups of students who had and had not received formal instruction in career education respectively.

The purposes of the study were to determine whether (a) the career education tests were reliable and sensitive to differences among grade levels in terms of student achievement, (b) there were differences between matched groups of experimental and control groups in terms of student achievement, and (c) there were differences among the seven exemplary projects in terms of student achievement.

Analysis of the data revealed the following:

1. The tests were equally reliable for both experimental and control groups, but the 4-6 and 7-9 tests were more reliable than the 1-3 test.

2. The tests consistently detected relatively large differences among grade (maturity) levels for both experimental and control groups.

3. Differences in student achievement were detected for experimental and control groups, but these differences were generally very small and not always in favor of the experimental groups.

4. Differences in student achievement were detected among the seven experimental projects, but those differences were generally quite small and not consistent among grade levels. That is, achievement scores of students at certain grade levels were higher than those of students in other projects, but the opposite was true at other grade levels.

These findings suggest that (a) the tests were reliable and capable of detecting differences where, in fact, differences exist, and that (b) the relative impact of career education instruction on the cognitive achievement of students was small and not educationally significant.

Interpretation/Findings

Four plausible explanations for not finding larger differences in the mean scores of students in experimental and control groups or among the students in the exemplary projects were discussed. First, it is possible that the tests did not adequately sample the content emphasized by teachers in the exemplary projects. Second, teachers in the control schools had perhaps been teaching career education concepts and thus, had an instructional program similar to teachers in the exemplary projects. Third, the amount of instructional emphasis and time devoted to career education was inadequate (1.5 hours per week) to make an impact on the cognitive achievements of students in the exemplary projects. Fourth, one year of career education instruction may be insufficient to demonstrate observable changes in the cognitive achievement of students. The findings also may suggest that integration of career education concepts with regular course content may not be the best instructional strategy for impacting student achievement. Additional research and evaluation of the instruments and instructional strategies are needed to provide answers to many of the questions suggested by this report.

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A SYSTEM FOR EVALUATING CAREER EDUCATION
IN MINNESOTA: 1972-1973

Forward

The state of Minnesota, for the past three years, has received federal funds authorized under Part C of the Vocational Education Amendments of 1968 to support demonstration projects in career education. These funds have been used to establish, develop and implement career education in eight different school districts which currently serve as demonstration sites for other schools in the State. Because one of the schools dropped out of the project and was replaced by another school, only seven schools participated in the evaluation processes.

Each of the seven school districts was selected on the strength of its proposal and the unique way in which it planned to implement career education. It was perceived that the seven site model, together with a comprehensive system of evaluation, was the most effective and efficient strategy for obtaining empirical baseline information about programmatic efforts directly related to the implementation of career education.

The Minnesota Research Coordinating Unit for Vocational Education (RCU), located at the University of Minnesota, in cooperation with the directors of the career education projects and the Vocational Division, State Department of Education, was given the responsibility to develop a comprehensive system of formative and summative evaluation. The purpose of the evaluation was to provide empirical data to various groups of decision makers at the local and state level in order that both the quality and quantity of career education could be enchanced.

The purpose of this report is to present and discuss the findings of the first year's evaluation of seven career education projects in Minnesota. The report is divided into three parts. Part I pertains to the "processes" used by each of the seven school districts to implement career education concepts. Part II presents information concerning the "product" outcomes of the projects in terms of the cognitive achievement of students concerning concepts related to the world of work. Part III describes the relationship between the process and product evaluations in terms of the relative impact the programs had on students.

PART I

A SYSTEM OF FORMATIVE EVALUATION OF THE PROCESSES USED TO IMPLEMENT CAREER EDUCATION

INTRODUCTION

A comprehensive system for evaluating developmental projects in career education must provide information to various groups of decision makers (e.g. teachers, local project directors, state department personnel) concerning both process and product outcomes. In the early stages of development, it is important to develop a system of formative evaluation which provides empirical information about the quantity and types of "processes" used to implement career education. Formative evaluation implies a systematic process of providing local decision makers (project directors and teachers) with relevant information such that immediate changes may be made in their program.

The purpose of Part I of this report is to discuss the system used to conduct a formative evaluation of the processes used to implement career education in the seven different school districts and descriptively compare the career education projects in terms of the types of activities and amount of time each devoted to career education. The objectives of the study were:

(1) To determine whether there were differences among the seven career education projects in terms of the type and/or relative amount of support service activities.

(2) To determine whether there were differences among the seven career education projects in terms of the (a) number of career education activities conducted, (b) type of curriculum organization, (c) amount of time devoted to instruction and (d) content emphasis.

(3) To determine whether there were differences among the seven career education projects in terms of the types of instructional methods used to implement career education.

PROCEDURES

Instrument Development

Two separate self evaluation instruments were used to obtain information from (1) the project directors and other support personnel and (2) teachers who were participating in the career education project. Data were collected each month for the last seven months of the 1972-73 school year.

Discussions with the directors of the seven career education projects and selected staff from the Minnesota State Department of Education were conducted in the spring of 1972 for the purpose of developing an effective and efficient system for conducting a formative evaluation of the processes used to implement career education. The requirements of the system included the following concerns:

(1) The instruments used should be comprehensive, and require minimal time to complete.

(2) The system should be capable of providing feedback to local directors and teachers on a monthly and/or quarterly basis.

(3) The system should be capable of aggregating data by project, school, month, grade level or curriculum area.

(4) The turnaround time for providing feedback should be minimal (one to two weeks).

One instrument was designed to obtain information from local project directors and other support personnel concerning the type and amount of services they provided (See Appendix A). The types of services were classified in the following manner: (1) general administrative duties, (2) promotional activities, (3) curriculum and instructional materials, (4) in-service training activities, and (5) counseling and guidance activities. Data were collected from directors each month for seven months. Both monthly totals and cumulative totals were recorded on separate forms by the staff of the Minnesota RCU and returned to directors each month.

An alternative strategy had to be used to obtain descriptive information about career education activities from teachers. A self-evaluation form was designed which would be non-threatening to classroom teachers. Because of the relatively large numbers of teachers involved (about 500) an efficient system of data collection and analysis had to be developed. Consequently, a form was developed in which the data could be read by optical scanning equipment and analyzed by computer.

The staff of the Minnesota RCU met with several teachers and project directors during the summer of 1972 for the purpose of identifying and classifying (a) the various types of instructional methods most frequently used to teach career education concepts and (b) the content areas related to career education. By referring to the rationale and model for career education developed by the staff of the Minnesota RCU, a prototype of an optical scan instrument , which incorporated most of the ideas of the teachers and directors, was developed and pre-pilot tested with about one hundred (100) teachers.

The final form of the instrument was developed by the staff of the Minnesota RCU with consultation from the staff at the University of Minnesota, Student Counseling Bureau, and printed in booklets containing twelve (12) 11" x 17" forms which could be easily removed from the booklet (See Appendix B). Each form provided teachers the opportunity to "describe" twenty different instructional activities each month simply by darkening the appropriate circles. Teachers were directed to complete the form immediately after an activity had been conducted and return it to the project director at the end of each month.

The instrument was divided into three parts. The first part contained teacher identification information (project, school and teacher codes, grade level, number of students, month and curriculum area). The second part contained information about the amount of preparation and instruction time in relationship to: (a) thirteen different methods of instruction and (b) three types of curriculum organization. In addition, teachers were asked to indicate the number of students who received instruction and evaluate the activity in terms of student interest or motivation. The last part of the form allowed teachers to indicate the content emphasis for each instructional activity and the amount of time required to "describe" each activity.

Special optical scan programs were developed by the staff at the Student Counseling Bureau to "read" the data on each form. Data were read by the optical scanner and written to a magnetic tape. A series of four specially developed computer programs were developed to analyze and summarize the data into a one page computer table (See Appendix C). Data could be aggregated for any combination of the six teacher codes (project, school, teacher, grade, month or curriculum area) which appear on the form in terms of "totals" or "averages".

The forms were collected and edited for accuracy and completeness by each project director or his designate at the end of the month. Forms were then sent to the Minnesota RCU and scored by the Student Counseling Bureau. Data were edited by special computer programs, corrected by the staff of the RCU and then re-scored. Data were accumulated for each participating teacher for seven academic months.

Teachers and project directors were provided with computer printouts at five different times during the year. The first analysis summarized three months of data (October - December). Separate printouts were provided for the month of January, February and March. The last set of printouts summarized all seven months of data and provided totals and averages for each of the following categories: (1) project, (2) school, (3) teacher, (4) grade and (5) curriculum area(s).

A total of seven different school districts participated in the process evaluation. (One school was eliminated from the evaluation because it was placing emphasis on in-service training and curriculum development rather than engaging in instructional processes.) These are designated in the report as projects 01 through 07 respectively. There was a total of 498 teachers who participated in the project; 325 elementary teachers; 110 junior high school teachers; 13 senior high school teachers. Table 1 shows the number of teachers by grade level and project who participated in the process evaluation.

Table 1

NUMBER OF TEACHERS BY GRADE LEVEL WHO PARTICIPATED IN EACH OF SEVEN CAREER EDUCATION PROJECTS

Project	Elementary	Junior High	Senior High	Total
01	8	13	12	33
02	15	7	1	23
03	113	--	—	113
04	21	23	--	44
05	122	67	--	189
06	57	--	--	57
07	39	--	--	39
Total	375	110	13	498

The project director, through a series of in-service workshops , identified the teachers within his project who were to participate in the evaluation.

Each participating teacher was asked to complete a biographical data sheet (See Appendix D). This information is summarized in Table 2. A total of 452 of the sheets were received which represented about a ninety-one percent (91%) return. Averages or percents are based on only the teachers who returned the form and are shown separately for each project and for the total group of teachers.

The average teacher who participated in the career education project had (a) taught for about nine (9) years, (b) two (2) years of non-teaching work experience and (c) been out of high school for about sixteen (16) years. A majority (68%) received their education within a comprehensive high school curriculum while relatively few (2%) studied in a vocational high school. Approximately three-fourths of the teachers were raised in either a small town or rural area and the other one-fourth were raised in either a urban or suburban area. Most of the teachers (84%) had only a bachelor's degree; relatively few (16%) had any work beyond the bachelor's degree.

The characteristics of teachers in each of the projects seem to be quite similar. Two of the projects (02 and 03) may have a slightly younger staff than the other projects; the staff in three projects (01, 02, and 04) seem to

Table 2

SUMMARY OF TEACHER CHARACTERISTICS FOR EACH CAREER EDUCATION PROJECT

Characteristics	Projects 01 N=33	02 N=11	03 N=106	04 N=32	05 N=184	06 N=56	07 N=30	Totals Average N=452
Average Years of Teaching	10	7	6	10	10	8	10	9
Average Years of Work Experience	4	3	1	3	2	1	1	2
Average Years Since High School Grad.	18	14	13	16	16	13	22	16
High School Curriculum								
General Curriculum	36%	9%	33%	34%	40%	25%	33%	30%
Comprehensive Curriculum	58%	91%	66%	66%	58%	73%	67%	68%
Vocational Curriculum	6%	0%	1%	0%	2%	2%	0%	2%
Current Degree								
Percent B.S.	26%	82%	54%	34%	37%	34%	73%	49%
Percent B.S.+	29%	18%	42%	47%	39%	50%	23%	35%
Percent M.S.	14%	0%	5%	9%	10%	13%	3%	8%
Percent M.S.+	31%	0%	0%	9%	15%	4%	0%	8%
Percent Ph.D.	0%	0%	0%	0%	0%	0%	0%	0%
Residence								
Percent Rural	19%	27%	34%	28%	29%	21%	30%	27%
Percent Small Town	57%	36%	47%	53%	48%	23%	57%	46%
Percent Urban	22%	18%	8%	16%	16%	21%	10%	16%
Percent Suburban	3%	18%	11%	3%	7%	34%	3%	11%
In-Service Training								
Average Number of Field Trips	5	3	2	2	2	1	1	2
Average Number of College Credits	2	0	.4	.2	1	.3	.4	1
Average Number of Hours in Workshops	34	27	1	15	7	2	1	12
Average Number of Hours in Meetings	5	5	2	13	6	1	1	5
Curriculum Development Activities								
Percent Participating	58%	27%	9%	13%	12%	4%	10%	20%
Percent Not Participating	42%	73%	91%	69%	88%	96%	90%	80%
Average Number of Hours in Activities	23	24	8	51	1	2	4	16

have had more work experience. A higher percent of teachers in one project (02) participated in a comprehensive high school curriculum than was the case in the other projects; only one project (01) appeared to have more teachers who had participated in a secondary vocational curriculum than the other six projects. Also, regardless of school district location, most of the teachers in each project were raised in a small town or rural community.

On the average, each teacher had (a) a bachelor's degree, (b) participated in two (2) field trips to industry, (c) obtained college credit for one or more career education courses, (d) twelve (12) hours of experience in career education workshops and (e) devoted about five (5) hours to career education meetings. In addition, about twenty percent (20%) of the teachers averaged sixteen (16) hours of time developing curriculum materials related to career education prior to the start of the 1972-73 school year.

There appear to be some differences among projects in terms of the teachers' prior involvement in career education training activities. Teachers in three projects (01, 02, and 04) appear to have been involved in more workshops and meetings than teachers in the other projects. Two projects (01 and 02) had involved a higher percent of their staff in the development of curriculum materials than the other five projects.

In general, it would appear that the teachers who participated in the career education project had a rather limited work experience (excluding the teaching profession). It also appeared that the directors of the projects recognized this fact and attempted to provide a variety of in-service training activities to compensate for this lack of experience.

Validity and Reliability of Data

Because the findings and conclusions of this report are dependent upon obtaining valid and reliable data from teachers, two separate analyses of the scoring system were conducted. The first analysis pertains to the effectiveness and efficiency of the scoring system and the second pertains to the accuracy of the data as perceived by the teachers who participated in the evaluation process. A summary of this evaluation is shown in Appendix E.

FINDINGS

Objective #1:

> To determine whether there were differences among the career education projects in terms of the type and amount of support services activities conducted.

Each of the seven project directors, together with support personnel (e.g. counselors, librarians, media specialists, etc.) was provided a "self-evaluation" form to be completed each month. The form requested information about the type and amount of effort devoted to (a) general administrative duties, (b) promotional activities (oral and written), (c) instructional materials (purchased or developed), (d) in-service training activities, and (e) counseling services.

Table 3 shows the totals and averages for each item on the form by project. A summary of the findings shown in Table 3 are as follows:

1. The average time devoted to general administrative duties was 249 hours for each project director with a majority of their time devoted to project administration-supervision. The least amount of time was devoted to evaluation and miscellaneous activities. Based on a school year of 180 days (1440 hours), project directors spent about seventeen percent of their time administering the project. Three projects (01, 03, and 05) reported that they devoted about twenty-seven percent (27%) of their time to project administration.

2. During the year, a total of 137 oral presentations about career education were made to various groups of people (average of twenty (20) presentations per project) but mostly to local school board members. While most of the presentations were made to groups of people within the community, it is interesting to note that several of the project directors made oral presentations at state and/or national conventions and to other nonlocal groups.

   Each of the seven career education projects disseminated, on the average, 78 different pieces of written materials (total of 543) to promote career education. Most of the materials were in the form of newsletters, books, pamphlets, or miscellaneous materials. It seems apparent that some projects (03, 05, 07) placed more emphasis on developing promotional materials than did some of the other projects.

3. The seven projects purchased or developed a total of 2053 instructional materials (an average of 293 per project). A majority of the materials were (a) printed materials or aids, or (b) resource guides.

4. A total of 2,443 and an average of 349 individuals per project attended a wide range of in-service training activities. The most frequently used in-service techniques were (a) in-school sessions, (b) extension classes, (c) formal workshops and (d) occupational field trips. It also appears that some projects (03, 04, 05) placed more emphasis on in-service training than did the other four projects.

5. A large number of students received some type of career education counseling services. Most of the students (a) made use of a career education library, (b) attended special guidance activities or (c) received individual or group counseling. While it is apparent that

Table 3

CUMULATIVE SUMMARY OF SUPPORT ACTIVITIES IN CAREER EDUCATION

Activities	Projects 01	02	03	04	05	06	07	Ave.
General Administrative Duties (Number of Hours)								
General Project Administration-Supervision	211	36	231	61	153	66	58	117
Securing Information and/or Consultation	89	47	41	33	104	23	25	52
Attend Non-School Career Ed. Meetings	23	36	55	25	50	42	18	36
Project Evaluation	39	29	23	30	45	21	23	30
Other	26	4	52	5	18	0	4	18
Total	388	152	402	154	370	152	128	253
No. of Oral Presentations								
Community and/or Social Groups	1	2	7	2	4	5	0	3
Occupational or Advisory Groups	1	1	1	2	2	5	2	2
Local School and School Board Personnel	26	3	12	2	9	0	1	8
Non-Local Presentations	1	0	1	3	16	2	1	3
Presentations at State or National Conventions	0	1	2	3	0	1	0	1
Other	9	0	1	0	7	0	1	3
Total	38	7	24	12	38	13	5	20
No. of Different Promotional Materials Disseminated								
News Letters	14	0	130	2	7	1	2	22
Project Reports	0	0	2	2	6	1	0	2
Visual Displays	0	0	1	5	4	0	1	2
Booklets or Pamphlets	3	0	0	0	0	1	151	22
Mass Media Releases	3	0	3	3	5	0	1	2
Other	60	0	0	0	110	25	0	28
Total	80	0	136	12	132	28	155	78
No. of Inst. Materials Purchased of Developed								
Printed Instructional Materials-Aids	314	66	5	540	58	0	0	140
Audio-Visual Materials	101	27	36	3	51	8	0	32
Resource Guide or Study	0	21	2	2	501	102	0	90
Books-References	25	50	14	50	13	23	0	25
Evaluation Materials	0	1	0	0	3	23	0	4
Other	0	9	1	0	4	0	0	2
Total	440	174	58	595	630	156	0	293
No. of People Attending In-Service Training Activities								
Formal Workshops	0	0	318	1	5	0	120	63
In-School Training Sessions	4	2	236	95	214	68	18	91
Career Education Extension Classes	106	0	0	0	464	0	0	81
Work Experience Programs	0	0	0	0	20	2	0	3
Occupational Field Trips	237	124	13	0	45	1	8	61
Other	0	0	0	307	33	0	2	49
Total	347	126	567	403	781	71	148	348
No. of Students Involved in Counseling								
Individual Student Counseling	1	560	33	67	1847	0	0	358
Group Counseling	0	173	0	31	2445	0	300	421
Special Guidance Activities (e.g. Career Ed Day)	0	2603	239	0	1918	0	450	744
Career Education Center-Library	425	6713	0	440	951	0	700	1318
Consultation and/or Assistance to Teachers	0	3070	0	60	5	0	0	448
Total	426	13119	272	598	7166	0	1450	3289

counselors in some projects did work with teachers, some projects did not make much use of counselors in their instructional program. Only one of the projects (06) did not report conducting any counseling activities for either students or teachers.

Objective #2:

> To determine whether there were differences among the seven career education projects in terms of the type and amount of career education instruction conducted by teachers.

The data presented in Table 4 were obtained via the teacher self-evaluation form. Data are summarized by project and across projects for each of the following: (1) total and average number of instructional activities, (2) percent of activities employing different methods of curriculum organization, (3) total and average amount of instruction, preparation and composite instructional time, and (4) percentage of activities devoted to clusters of career education content. Composite instruction time is the sum of preparation and instruction time.

1. A total of 10,026 career education instructional activities were reported by the teachers in the seven projects. On the average, each teacher conducted twenty-one (21) different instructional activities related to career education during the year. It appears that, on the average, the teachers in the three projects (03, 04, and 05) conducted more activities than teachers in the other projects.

2. Of the total number of activities conducted (10,026), sixty-four percent (64%) of them were integrated with the regular course content and about eighteen percent (18%) were taught either as separate units or classes, respectively. While some of the projects differed in the way in which the activities were placed in the curriculum, more than fifty percent of the activities conducted in each project were integrated with the regular course content.

3. Teachers reported to have spent a total of 17,606 hours conducting and preparing for career education instruction. About sixty-five percent (65%) of the time was for actual classroom instruction and the remaining time (35%) was used for preparation. On the average, each of the 498 teachers who participated in the process evaluation spent about 35 hours over a seven month period of time on career education instruction activities. This amounts to an average of about five hours per month or about 1.25 hours per week. Based on a full 180 days of school (1440 hours) each teacher spent a little more than two percent (2.43%) of the school year preparing for and/or conducting career education activities. There was, however, considerable differences among projects in terms of the average amount of time teachers devoted to career education instruction. The averages range from a high of 46 hours a year (project 05) to a low of 18 hours a year (project 06).

Table 4

A COMPARISON OF SEVEN CAREER EDUCATION PROJECTS IN TERMS OF THE RELATIVE AMOUNT OF EFFORT DEVOTED TO CAREER EDUCATION INSTRUCTIONAL ACTIVITIES

Activity			Projects							Totals
			01 N=33	02 N=23	03 N=113	04 N=44	05 N=189	06 N=57	07 N=39	N=498
Total and Average Numbers of Instructional Activities per Teacher per Year			397 $\bar{X}$=12	235 $\bar{X}$=10	3046 $\bar{X}$=27	900 $\bar{X}$=20	4075 $\bar{X}$=22	662 $\bar{X}$=12	711 $\bar{X}$=18	10,026 $\bar{X}$= 21
Curriculum Organization	Separate Units	N	62	39	465	180	891	108	102	1847
		%	16%	17%	15%	20%	22%	16%	14%	18%
	Separate Classes	N	48	47	509	101	862	95	106	1769
		%	12%	20%	17%	11%	21%	15%	15%	18%
	Integrated with Content	N	287	149	2072	619	2322	458	503	6410
		%	72%	63%	68%	69%	57%	69%	71%	64%
	Total	N	397	235	3046	900	4075	662	711	10,026
		%	100%	100%	100%	100%	100%	100%	100%	100%
Total and Average Hours of Composite Instruction Time per Teacher per Year			1022 $\bar{X}$=31	736 $\bar{X}$=32	3881 $\bar{X}$=34	1566 $\bar{X}$=36	8595 $\bar{X}$=46	1056 $\bar{X}$=19	751 $\bar{X}$=19	17,606 $\bar{X}$=35
Total and Average Hours of Instruction Time per Teacher per Year			591 $\bar{X}$=18	494 $\bar{X}$=21	2482 $\bar{X}$=22	893 $\bar{X}$=20	5419 $\bar{X}$=29	688 $\bar{X}$=12	483 $\bar{X}$=12	11,050 $\bar{X}$=22
Total and Average Hours of Preparation Time per Teacher per Year			431 $\bar{X}$=13	242 $\bar{X}$=11	1399 $\bar{X}$=12	673 $\bar{X}$=15	3176 $\bar{X}$=17	368 $\bar{X}$=6	268 $\bar{X}$=7	6557 $\bar{X}$=13
Distribution of Effort per Content Area	Self Awareness	N	614	515	4921	1604	6706	868	1144	16,372
		%	20%	21%	17%	18%	17%	19%	16%	18%
	Work Roles: General	N	409	332	4017	1168	5194	738	941	12,799
		%	13%	14%	14%	13%	14%	16%	13%	14%
	Work Roles: Requirements	N	406	349	3393	1091	4908	523	947	11,617
		%	13%	14%	12%	12%	13%	12%	13%	13%
	Work Roles: Workers	N	325	291	2639	733	3719	441	734	8882
		%	11%	12%	9%	8%	10%	10%	10%	10%
	Planning Process	N	361	276	3000	934	4518	394	828	10,311
		%	12%	11%	10%	10%	12%	9%	11%	11%
	Occupational Levels	N	459	231	3795	1284	4778	559	892	11,998
		%	15%	10%	13%	14%	12%	12%	12%	13%
	Occupational Industries	N	534	436	7090	2346	8731	980	1808	21,925
		%	17%	18%	25%	26%	23%	22%	25%	24%
	Total	N	3108	2430	28855	9160	38554	4503	7294	93,904
		%	100%	100%	100%	100%	100%	100%	100%	100%

The results were about the same in terms of the average amount of time teachers devoted to either career education instruction or preparation. Teachers in project 05 had the highest yearly average and teachers in project 06 had the lowest yearly average.

4. The two areas of content that received the greatest emphasis were (a) occupational industries and (b) self awareness. The content areas which received the least emphasis were (a) workers and (b) career planning process. While there were some differences in the relative emphasis of certain content areas, the general distribution among content areas was about the same for all of the projects. It therefore seems safe to conclude that while the exact content for each instructional activity may have differed greatly among teachers, and that the projects may have emphasized different instructional techniques, the general content emphasis (objectives) was very similar for each of the projects.

Objective #3:

> To determine whether there were differences among the seven career education projects in terms of the instructional methods used by teachers to implement career education.

Information regarding the use of various instruction methods was obtained via teacher response to the self-evaluation form. Table 5 presents the data in terms of frequencies (N), percents and rank orders of instructional methods used for each project separately and for the seven projects collectively.

A total of 10,026 activities were conducted by the teachers in the seven projects during a seven month period. The instructional methods used most frequently were ranked as follows: (1) audio visual, (2) presentation-discussion, (3) class projects, (4) workers in class, (5) role playing, (6) field trips, and (7) counseling and guidance. The least frequently used methods were: (13) inter-class projects, (12) work observation, (11) use of information center, (10) simulated work experience, (9) career games, and (8) work experience.

A comparison of the projects in terms of the rank order of instructional methods used, shows some obvious differences in the way in which each project implemented career education. The greatest differences that were detected among projects occured in the use of: (a) field trips, (b) work observation, (c) work experience, (d) career games, (e) class projects, (f) counseling and guidance, and (g) use of information center. It, therefore, seems safe to conclude that while projects made use of different combinations of methods to implement career education, they also used instructional techniques that were quite common to each other.

Table 6 shows the total and average amount of time devoted to each method of instruction for the seven projects separately and collectively. Teachers spent a total of about 17,606 hours either preparing for or teaching career education. On the average, each teacher spent about 35.4 hours of time on career education during the year with each activity taking on the average of 2.0 hours of composite instruction time.

Table 5

A COMPARISON OF SEVEN CAREER EDUCATION PROJECTS IN TERMS OF THE FREQUENCY, PERCENT AND RANK ORDER OF INSTRUCTIONAL METHODS

Method of Instruction	Projects																					Total N=498		
	01			02			03			04			05			06			07					
	N	%	Rank	N	%	Rank	N	%	Rank	N	%	Rank	N	%	R	N	%	R	N	%	Rank	N	%	Rank
Field Trip	31	8	5.0	25	11	4.0	174	6	6.0	50	6	8.0	169	4	8	25	4	8	66	9	3.0	540	5	6
Workers in Class	27	7	6.5	21	9	5.5	298	10	4.0	82	9	4.0	264	6	5	53	8	4	61	9	4.0	806	8	4
Work Observation	15	4	8.5	5	2	13.0	74	2	10.0	22	2	11.5	125	3	11	42	6	5	51	7	6.0	334	3	12
Work Experience	13	3	10.0	17	7	8.0	88	3	8.5	47	5	9.0	237	6	6	8	1	13	16	2	9.0	426	4	8
Audio Visual	42	11	3.0	26	11	3.0	900	30	1.0	155	17	2.0	802	20	2	132	20	2	194	27	1.0	2251	23	1
Role Playing	15	4	8.5	13	6	9.0	195	6	5.0	72	8	5.0	185	5	7	34	5	6	37	5	7.0	551	5	5
Career Games	9	2	11.5	7	3	11.0	161	5	7.0	52	6	7.0	120	3	12	31	5	7	15	2	10.0	395	4	9
Presentation Discussions	84	21	1.0	32	14	2.0	570	19	2.0	163	18	1.0	1005	25	1	164	25	1	158	22	2.0	2176	22	2
Projects in Class	83	21	2.0	34	14	1.0	339	11	3.0	121	14	3.0	470	12	3	102	16	3	54	8	5.0	1203	12	3
Inter-Class Projects	8	2	13.0	6	3	12.0	51	2	12.0	9	1	13.0	61	1	13	14	2	11	10	1	13.0	159	2	13
Simulated Work Experience	33	8	4.0	21	9	5.5	65	2	11.0	29	3	10.0	159	4	9	24	4	9	13	2	11.5	344	3	10
Counseling-Guidance	27	7	6.5	20	9	7.0	41	1	13.0	22	2	11.5	343	8	4	17	3	10	13	2	11.5	483	5	7
Use of Information Center	9	2	11.5	8	3	10.0	88	3	8.5	66	7	6.0	135	3	10	11	2	12	23	3	8.0	340	3	11
Total	396	100		235	100		3044	100		890	100		4075	100		657	100		711	100		10008	100	

Table 6

A COMPARISON OF SEVEN CAREER EDUCATION PROJECTS IN TERMS OF THE TOTAL AND AVERAGE COMPOSITE TIME (HOURS) DEVOTED TO EACH OF THIRTEEN DIFFERENT INSTRUCTIONAL METHODS

Method of Instruction	Project 01		02		03		04		05		06		07		Total N=498	
	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time	Total Time	Ave. Time
Field Trip	112	3.6	96	3.8	462	2.7	110	2.2	521	3.1	70	2.8	131	2.0	1502	2.8
Workers in Class	60	2.2	58	2.8	372	1.2	206	2.5	525	2.0	78	1.5	66	1.1	1365	1.7
Work Observation	35	2.3	12	2.4	109	1.5	36	1.6	223	1.8	46	1.1	37	.7	498	1.5
Work Experience	42	3.2	42	2.5	145	1.6	123	2.6	767	3.2	16	2.0	17	1.1	1152	2.7
Audio Visual	78	1.9	57	2.2	826	.9	193	1.2	972	1.2	153	1.2	167	.9	2446	1.0
Role Playing	46	3.1	24	1.9	294	1.5	111	1.5	360	1.9	51	1.5	43	1.2	929	1.7
Career Games	19	2.1	23	3.3	178	1.1	58	1.1	222	1.8	51	1.6	13	.9	564	1.4
Presentation Discussions	175	2.1	101	3.2	605	1.1	231	1.4	1357	1.3	225	1.4	128	.8	2822	1.3
Projects in Class	219	2.6	108	3.2	504	1.5	337	2.8	1340	2.9	227	2.2	78	1.4	2813	2.3
Inter-Class Projects	21	2.6	30	5.0	75	1.5	7	.8	162	2.7	26	1.9	8	.8	329	2.1
Simulated Work Experience	128	3.9	130	6.2	155	2.4	65	2.2	585	3.7	71	3.0	20	1.5	1154	3.4
Counseling-Guidance	70	2.6	36	1.8	42	1.0	39	1.8	1298	3.8	27	1.6	12	.9	1524	3.2
Use of Information Center	17	1.9	19	2.4	112	1.3	50	.8	264	2.0	15	1.3	31	1.4	508	1.5
Total	1022	2.6	736	3.1	3879	1.5	1566	1.7	8596	2.4	1056	1.8	751	1.1	17606	2.0

It seems apparent that teachers made use of a wide range of instructional techniques, however, a greater amount of time was devoted to the use of visual aids, presentation-discussions and class projects than some of the other instructional methods. Audio-visual and presentation-discussion, on the average, required the least amount of time per activity (1.1 hours and 1.3 hours respectively). Activities which, on the average, seem to require the most time were: (a) simulated work experience (3.3 hours), (b) field trips (2.8 hours) and (c) work experience (2.7 hours). In general, it seems that activities which make use of facilities outside of the classroom or try to simulate actual work experiences require considerably more time than activities which typically can be taught in the regular classroom.

Projects seemed to differ with respect to the average amount of time they devoted to the various instructional methods. Table 7 shows the range in the average amount of time consumed by each method of instruction.

Table 7

RANGE IN AVERAGE AMOUNT OF TIME (HOURS) CONSUMED BY EACH OF THIRTEEN INSTRUCTIONAL METHODS

	Range	
	High	Low
Field Trip	3.8	2.0
Workers in Class	2.8	1.0
Work Observation	2.5	.7
Work Experience	3.3	1.1
Audio Visual	2.2	.9
Role Playing	3.1	1.2
Career Games	3.4	.9
Presentation-Discussion	3.0	.8
Projects in Class	3.2	1.4
Inter-Class Projects	5.1	.8
Simulated Work Experience	6.0	1.6
Counseling and Guidance	3.8	.9
Use of Information Center	2.4	.8

This information suggests that one of the differences that may exist among projects is the relative amount of time which is devoted to each activity. This does not suggest that the quality of instruction in the projects were not equal, but only that the distribution of time per instructional method was different.

The data contained in this report were based on monthly self-evaluations completed by both teachers and directors for a seven month period. Because the information was collected at only one point in time, no attempt was made to empirically determine the exact validity or reliability of the data. However, an attempt was made through a survey of teachers to obtain a gross estimate of the reliability and validity of the data obtained by the specially designed optical scan form.

There may be some doubt about the validity and reliability of the data provided by teachers. The percent of errors teachers made in completing the self-evaluation form each month ranged from a high of seventy-three percent (73%) for the first reporting period to a low of eleven percent (11%) in the last reporting period. It seems likely that teachers had difficulty completing the form either because (a) the form or directions were not clear or (b) teachers were not accustomed to completing an optical scan evaluation form. Based on a survey of teachers who participated in the evaluation, it seemed apparent that most teachers waited until the end of the month to complete the form rather than completing it on a daily basis as directed. Completing the form in retrospect at the end of the month may tend to produce a certain amount of unreliability. On the other hand, a majority of the teachers reported that they felt (a) the directions on the form were quite clear, (b) the form was quite comprehensive and easy to follow, and (c) they accurately reported all of the instructional activities they conducted even though most forms were not completed until the end of the month.

The state of Minnesota utilized its share of federal funding to assist eight different school districts to implement career education. Each of the projects proposed uniquely different ways for implementing career education. Because so little was known about the most effective or efficient way(s) to implement career education, the Minnesota RCU was contracted to develop and operate a comprehensive system of evaluation in order to obtain the necessary empirical information for making decisions about improving the quality and quantity of activities in each of the developmental projects. This report contains a description of the formative evaluation (process evaluation) used by teachers and directors to implement career education. Because of a change in projects, only seven of the eight projects participated in the evaluation during the 1972-73 school year. The study was primarily concerned with determining whether there were differences among the projects in terms of the amount, type and distribution of effort in career education that was devoted to (a) support activities, (b) instructional methods and (c) instructional content.

Data were obtained from project directors, selected support personnel and from teachers for a seven month period using two specially designed self-evaluation forms. Directors and support personnel completed a self-evaluation form which described the type and amount of effort devoted to support activities each month. Teachers described the type of instructional methods and amount of time they devoted to career education by completing a form designed to be read by optical scanning equipment. Teachers were asked to "describe" each activity related to career education by "darkening" the appropriate circles on the form. The form provided teachers the opportunity to describe twenty (20) separate activities each month in terms of (a) methods of instruction, (b) curriculum organization, (c) success of the activity to interest and motivate students, (d) amount of preparation and instruction time devoted to each activity, (e) number of students served and (f) content emphasis.

Teachers and directors began completing the forms in October 1972. Each month directors received a cumulative summary of the support activities in their project. Teachers were provided with computer printouts of their career education instructional activities five times during the year.

The formative evaluation design called for a continuous system of data analysis and feedback such that immediate modifications could be made in each project on a monthly basis. A total of about 3500 self-evaluation forms were processed for about 500 participating teachers. There seems to be little doubt that the optical scan form used by teachers represents an efficient way to obtain and analyze large quantities of data. The relative cost of collecting the data from teachers using the optical scan form was about $1.58 per teacher in contrast to the cost of collecting the same data by more conventional means and then having it keypunched. The latter method would have averaged about $19.00 per teacher.

The conclusions concerning the type and amount of support activities provided are as follows:

1. Project directors reported to have engaged in a wide range of support activities to include (a) project administration and supervision, (b) promotional activities (written and oral), (c) curriculum development, (d) in-service training and (e) guidance and counseling services to students and staff.

2. Project directors devoted, on the average, about seventeen percent (17%) of their work load to the career education project with most of the time spent on project administration and supervision.

3. Projects did differ in terms of the amount of emphasis devoted

to (a) promotional activities, (b) in-service training, (c) curriculum development and (d) counseling services.

Based on the information provided by teachers using the specially designed self-evaluation forms, the following conclusions seem warranted:

1. Each teacher who participated in the evaluation process conducted, on the average, twenty-one (21) activities related to career education during a seven month period which consumed (on the average) about thirty-five (35) hours of preparation and instruction time. This means that each teacher spent about five hours a month or about one and one-quarter (1.25) hours per week on instructional activities related to career education. While projects tended to differ in terms of the average number of activities conducted and the average number of hours teachers devoted to career education, these differences were not large.

2. A majority of the activities conducted by teachers were integrated with the regular course content; proportionally fewer activities were taught as separate classes or units. Projects did not differ substantially in terms of the way career education activities were implemented into the curriculum.

3. Teachers tended to place emphasis on different content areas (objectives). A majority of the instructional emphasis was placed on (a) self awareness concepts, and (b) industries. Proportionately less emphasis was placed on (a) career planning processes, (b) work role requirements and workers and (c) occupational levels. Although there were some differences among projects in terms of content emphasis, the general distribution of effort across content areas was quite similar.

4. Teachers conducted a total of 10,026 career education activities which consumed about 17,606 hours of instruction and preparation time. These activities were distributed somewhat disproportionately among thirteen types of instructional methods. The most frequently used methods were: (a) audio-visual presentations, (b) presentation and discussion, (c) class projects, and (d) workers in class. The least frequently used methods were: (a) inter-class projects, (b) work observation, (c) use of information center, (d) career games, and (e) work experience. The general conclusion suggests that teachers preferred instructional methods which could be conducted within the classroom.

5. Projects did differ in terms of the relative use of various instructional methods. Major differences occured in the use of about seven instructional methods: (1) field trips, (2) work observation, (3) work experience, (4) career games, (5) class projects, (6) counseling and (7) use of information center. This conclusion supports the contention that projects did, in fact, differ with respect to the manner in which career education was implemented.

6. Certain instructional methods tended to consume more instructional time than other methods. On the average, the methods which consumed the most time were those which dealt with or attempted to simulate work experiences outside of the classroom (e.g. field trips, simulated work experiences, work experience). The methods which consumed the least amount of time were those which could most easily be taught in the classroom (e.g. audio-visual presentations, presentation-discussions, career games, etc.)

7. Projects differed considerably in terms of the average amount of time devoted to each of the instructional methods. It appears that projects may have had different strategies for implementing career education. Some teachers appeared to have conducted fewer activities but spent more time per activity while others appeared to have conducted more activities but spent less time on each activity.

Recommendations

The findings suggest that two types of recommendations be made in the project in subsequent years. First, it seems apparent that the instruments needed to describe the "processes" used to implement career education be modified and improved. Second, that directors and teachers be encouraged to spend a greater proportion of their time towards implementing career education.

Self-Evaluation Instrument: Of the two self-evaluation instruments used, only the optical scan form for teachers appears to need improvement. Suggested areas of improvement are as follows:

1. Provide space to code the number of forms submitted each month and eliminate the code dealing with "number of students".

2. Revise and clarify directions with emphasis on completing the form on a daily basis.

3. Eliminate separate grade designations and create clusters of grades (e.g. K-3, 4-6, 7-9, 10-12).

4. Modify existing and add different types of instructional methods to the form.

5. Number each of the major categories on the form to insure that teachers place a "mark" in each category.

6. Add a row of optical scan circles for teachers to indicate (a) no preparation time was needed and (b) that more than 100 students were involved in an instructional activity.

7. Shade alternate columns on the form so it will be easier for teachers to follow the correct column down the form.

Program Implementation: It is generally accepted that the amount students learn in a subject is directly related to the amount of time a teacher devotes to that subject. If this assumption is correct, the more emphasis that is placed on career education, the greater the impact is likely to be on students.

Project directors devoted about twenty-five percent (25%) of their time administering and supervising the career education projects and teachers spent slightly less than three percent of their total school year teaching concepts related to career education. While the appropriate amount of time that should be devoted to career education has not been specified, it would seem that teachers are likely to have to devote more time to it if the intent is to make an impact on students. It therefore seems plausible that both teachers and directors in the exemplary projects reassess the distribution of their responsibilities for career education and establish some guidelines for the amount of time that should be devoted to career education.

APPENDICES

Appendix A:	Biographical Data Sheet for Teachers
Appendix B:	Summary of Support Activities in Career Education: Directors Form
Appendix C:	Teachers Self-Evaluation of Career Education Instructional Activities
Appendix D:	Sample Computer Output for Teacher Self-Evaluation Form
Appendix E:	Effectiveness and Efficiency of Data and Process Evaluation System

APPENDIX A

Biographical Data Concerning the Career Education Teachers of Exemplary Projects

Check or write in appropriate answers.

Identification Codes: ____________ ____________ ____________

____________	____________	____________
Project	School	Teacher Code

1. Number of years of teaching experience (including this year): ___

2. Number of years of full-time non-school work experience in business and industry (including military): ___

3. Amount of in-service career education training:

   A. Number of organized field trips to business and industry for career orientation: ___
   B. Number of credits from college classes in career education: ___
   C. Number of hours spent in formal career education workshops: ___
   D. Number of hours spent in career education staff meetings: ___

4. Were you involved in organized curriculum development activities for the career education project? Yes ___ No ___. If yes, how many hours did you spend in this activity? ___

5. Which of the following locations best describes your residence before teaching? Rural ___ Small town ___ Urban ___ Suburban ___

6. What was your primary curriculum emphasis in high school? General Preparation ___ College Preparation ___ Vocational Preparation ___

   Date of high school graduation: ____

7. What is your current degree status and major field?

   Bachelors ___ Major ______________________
   Bachelors plus ___ Major ______________________
   Masters ___ Major ______________________
   Masters plus ___ Major ______________________
   Doctorate ___ Major ______________________

8. How many years have you been directly involved in the career education project (including this year)? ___

9. How many years have you included the planned study of career education in your classes? ___

APPENDIX B

IDENTIFICATION CODE

Project

○ 0	○ 0
● 1	● 1
○ 2	○ 2
○ 3	○ 3
○ 4	○ 4
○ 5	○ 5
○ 6	○ 6
○ 7	○ 7
○ 8	○ 8
○ 9	○ 9

School

● 0	○ 0
○ 1	○ 1
○ 2	○ 2
○ 3	○ 3
○ 4	○ 4
○ 5	○ 5
○ 6	● 6
○ 7	○ 7
○ 8	○ 8
○ 9	○ 9

Teacher

● 0	○ 0	○ 0
○ 1	● 1	○ 1
○ 2	○ 2	○ 2
○ 3	○ 3	○ 3
○ 4	○ 4	○ 4
○ 5	○ 5	○ 5
○ 6	○ 6	● 6
○ 7	○ 7	○ 7
○ 8	○ 8	○ 8
○ 9	○ 9	○ 9

Grade Level

○ K	○ 7
○ 1	○ 8
○ 2	○ 9
● 3	○ 10
○ 4	○ 11
○ 5	○ 12
○ 6	
○ Ungraded	

Number of Students

● 0	○ 0	○ 0
○ 1	○ 1	● 1
○ 2	● 2	○ 2
○ 3	○ 3	○ 3
○ 4	○ 4	○ 4
○ 5	○ 5	○ 5
○ 6	○ 6	○ 6
○ 7	○ 7	○ 7
○ 8	○ 8	○ 8
○ 9	○ 9	○ 9

Month

○ July
○ August
○ Sept.
○ Oct.
○ Nov.
● Dec.
○ Jan.
○ Feb.
○ Mar.
○ Apr.
○ May
○ June

CURRICULUM AREA

○ UNGRADED ELEMENTARY
● REGULAR ELEMENTARY
SECONDARY SCHOOL SUBJECTS
○ Language
○ Math
○ Science
○ Social Studies
○ Health
○ Physical Education
○ Fine Arts
○ Practical Arts
○ Vocational
○ Other

TEACHER'S SELF EVALUATION OF CAREER EDUCATION INSTRUCTIONAL ACTIVITIES

Directions: The following six steps have been proposed to assist you in providing information about the instructional activities in your class that relate to career education and to insure that your responses will be read accurately by the optical scanning device.

Step 1: Follow the simple rules for making responses on the form:

Use only a Number 2 or softer black lead pencil
Make heavy black marks that fill the circle *completely*
Erase cleanly any answer you wish to change
Make no stray marks on the paper
Do not make additional folds in the form
Example: Will marks made with a ball point pen be properly read? ○ Yes ● No

Step 2: Using the code numbers which appear on the front of your booklet, fill in the coding blocks by darkening the appropriate circles. In addition, indicate the (a) grade level you teach, (b) total number of students for whom you are responsible, (c) month of the year you completed the form and (d) curriculum area for which you are responsible.

Step 3: Open the form and become familiar with the information you are to use to describe *each* instructional activity that is related to career education. As soon as you complete an instructional activity, complete the form by darkening in *one* circle in the appropriate space for each category. Each form allows you to describe twenty (20) different instructional activities. Use as many forms as are necessary to describe all of the career education activities in which you engaged this month.

Step 4: Indicate the number of minutes it took you to describe *each* instructional activity by darkening the appropriate circle.

Step 5: Review the form to make sure it is complete and properly filled out and then see to it that it gets to your director by the last day of each calendar month. NOTE: Do not make additional folds in the form.

Step 6: Repeat Steps 1-5 to describe the instructional activities for each calendar month.

This instrument was developed by Roy Thomas with technical consultation from Brandon B. Smith from the Minnesota RCU and the Vocational-Technical Division of the Minnesota State Department of Education for use with exemplary career education projects.

MINNESOTA RESEARCH COORDINATING UNIT
FOR VOCATIONAL EDUCATION
University of Minnesota • Minneapolis, Minnesota

INSTRUCTIONAL ACTIVITIES IN CAREER EDUCATION

MARK ONE IN EACH CATEGORY		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Instructional Resources and Methods	Field trip	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Workers in class	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Work observation-interview	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Work experience	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Audio-visual	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Role playing (plays, skits)	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Career Games	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Presentation-discussion	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Projects in class	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Inter-class projects	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Simulated work experience	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Counseling and guidance	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Use of information center	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Organization	Separate units	○	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
	Separate classes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Integrated with course content	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Evaluation	Excellent interest and motivation	●	●	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Average interest and motivation	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Poor interest and motivation	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○

MARK AS APPROPRIATE FOR EACH CATEGORY

Amount of instructional time

MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS MIN HRS

Amount of preparation time

Number of people or students involved

MARK AS MANY AS APPLY			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
CAREER EDUCATION OBJECTIVES AND CONTENT	Self Awareness	Mental-physical abilities	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		School and work abilities	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Personality, attitudes	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Educational needs, goals	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Occupational needs, goals	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Work Roles – General	Importance of work	●	○	○	●	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Socio-economic impact	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Change in work roles	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Kinds of careers	●	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
	Work Roles – Requirements	Ability requirements	○	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Educational requirements	○	○	○	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Working conditions	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Employment policy and demands	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Work Roles – Workers	Mental-physical abilities	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Needs and satisfaction	○	○	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Educational needs, goals	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Planning Process	Relating work to non-work roles	○	●	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Need for career planning	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Processes of career planning	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Locating and using information	○	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Career and education opportunities	○	○	○	○	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Educational role in planning	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Occupational Area	Construction	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Manufacturing	●	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Natural resources	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Transportation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Marketing and advertising	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Communications	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Government and finance	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Public utilities	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Education and research	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Health and welfare	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Recreation	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Arts and entertainment	○	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Personal services	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		Consumer and homemaking	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	Occupational Level(s)	Professional and technical	●	●	●	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Managers and owners	○	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Clerical	●	○	○	○	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Sales and Service	○	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Craftsmen	○	●	○	●	○	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		Operatives and Laborers	●	○	○	○	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
Form Completion Time:		Under 3 minutes	○	○	●	●	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○
		3-6 minutes	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
		over 6 minutes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

APPENDIX C

Cumulative Summary of Support Activities in Career Education for the month of ________.

(Directors Form)

Name of Director ______________________ Project Name ______________________

Project Code Number ______________________ Date Reported ______________________

Directions: The purpose of this log sheet is to obtain information from the director about his activities and the activities of support staff which contribute directly to the success of the career education project. At the end of each week the director is encouraged to complete this form by (a) looking in retrospect at his activities and (b) obtaining relevant information about the activities of other support personnel.

		Number of Hours
General Administration Duties	General Project Administration-Supervision	
	Securing Information and/or Consultation	
	Attend Non-School Career Education Meetings or Conferences	
	Project Evaluation	
	Other (Specify) ______________________	

Promotional Activities Related to Career Education			Number of Presentations	Total Amount of Time (Hrs)	No. of People Attending
	Oral Presentations	Community and/or Social Groups			
		Occupational or Advisory Groups			
		Local School and School Board Personnel			
		Non-Local Presentations			
		Presentations at State or National Conventions			
		Other (Specify) ______________			
			Number Produced	**Number Disseminated**	**Developmental Time (Hrs)**
	Printed Materials	News Letters			
		Project Reports			
		Visual Displays			
		Booklets or Pamphlets			
		Mass Media Releases			
		Other (Specify) ______________			

		No. of Different Material		Man Hours of Developmental Time
		Purchased	Developed	
Career Education Materials	Printed Instructional Materials-Aids			
	Audio Visual Materials			
	Resource Guide or Study			
	Books-References			
	Evaluation Materials			
	Other (Specify) ______________			

		No. of People Attending	Total Hours Per Week	Total Man Hours/Week
In Service Career Education	Formal Workshops			
	In-School Training Sessions			
	Career Education Extension Classes			
	Work Experience Programs			
	Occupational Field Trips			
	Other (Specify) ______________			

		No. of Students Participating	No. of Teachers Participating
Counseling and Guidance	Individual Student Counseling		
	Group Counseling		
	Special Guidance Activities (e.g. Career Education Days)		
	Career Education Center-Library		
	Consultation and/or Assistance to Teachers		

Form Completion Time: ________

SUMMARY OF INSTRUCTIONAL ACTIVITIES IN CAREER EDUCATION -- MINNESOTA RCU, BRANDON B. SMITH, PROJECT DIRECTOR
PROJECT: OWATONNA (3)

METHODS	FREQUENCY	TOTAL INSTRUCTIONAL TIME	TOTAL PREPARATION TIME	AVERAGE NO. OF STUDENTS	COMPOSITE INSTRUCTOR TIME	PERCENTAGE DISTR. OF EVALUATION EXCL.	GOOD	POOR
FIELD TRIP	85	136.8 HRS.	78.7 HRS.	37.8	215.5 HRS.	90.6	9.4	0.0
WORKERS IN CLASS	125	95.0 HRS.	47.2 HRS.	30.0	142.2 HRS.	68.0	24.8	7.2
WORK OBSERVATION-INTERVIEW	45	51.8 HRS.	16.8 HRS.	34.2	68.7 HRS.	57.8	42.2	0.0
WORK EXPERIENCE	38	32.5 HRS.	26.2 HRS.	23.9	58.7 HRS.	60.5	39.5	0.0
AUDIO-VISUAL	342	212.5 HRS.	123.2 HRS.	28.0	335.7 HRS.	55.8	43.3	.9
ROLE PLAYING (PLAYS, SKITS)	87	85.0 HRS.	56.2 HRS.	26.3	141.2 HRS.	72.4	26.4	1.1
CAREER GAMES	83	64.2 HRS.	41.5 HRS.	27.5	105.7 HRS.	66.3	31.3	2.4
PRESENTATION-DISCUSSION	321	218.8 HRS.	127.2 HRS.	27.8	346.0 HRS.	45.2	54.5	.3
PROJECTS IN CLASS	166	159.5 HRS.	81.0 HRS.	25.8	240.5 HRS.	63.9	34.3	1.8
INTER-CLASS PROJECTS	31	32.2 HRS.	15.7 HRS.	31.4	47.8 HRS.	48.4	51.6	0.0
SIMULATED WORK EXPERIENCE	34	34.2 HRS.	30.5 HRS.	27.3	64.7 HRS.	85.3	14.7	0.0
COUNSELING AND GUIDANCE	21	10.3 HRS.	7.2 HRS.	24.9	17.5 HRS.	61.9	38.1	0.0
USE OF INFORMATION CENTER	45	36.8 HRS.	16.8 HRS.	26.2	53.7 HRS.	62.2	33.3	4.4
TOTALS	1423	1169.7 HRS.	668.0 HRS.	28.4	1837.7 HRS.	60.2	38.4	1.5
CURRICULUM ORGANIZATION								
SEPARATE UNITS	195	154.5 HRS.	116.2 HRS.	27.0	270.7 HRS.	66.7	33.3	0.0
SEPARATE CLASSES	197	135.8 HRS.	79.7 HRS.	27.8	215.5 HRS.	53.3	44.2	2.5
INTEGRATED WITH COURSE CONTENT	1020	871.2 HRS.	467.0 HRS.	28.7	1338.2 HRS.	60.6	38.2	1.2
TOTALS	1412	1161.5 HRS.	662.8 HRS.	28.4	1824.3 HRS.	60.4	38.4	1.2

FREQUENCIES OF RESPONSE TO CAREER EDUCATION OBJECTIVES AND CONTENT:

FREQ.-SELF AWARENESS
530 -MENTAL-PHYSICAL ABILITIES
268 -SCHOOL AND WORK ABILITIES
533 -PERSONALITY, ATTITUDES
317 -EDUCATIONAL NEEDS, GOALS
504 -OCCUPATIONAL NEEDS, GOALS
FREQ.-WORK ROLES: GENERAL
629 -IMPORTANCE OF WORK
251 -SOCIO-ECONOMIC IMPACT
207 -CHANGE IN WORK ROLES
680 -KINDS OF CAREERS
FREQ.-WORK ROLES: REQUIREMENTS
458 -ABILITY REQUIREMENTS
271 -EDUCATIONAL REQUIREMENTS
480 -WORKING CONDITIONS
190 -EMPLOYMENT POLICY AND DEMANDS

FREQ.-WORK ROLES: WORKERS
435 -MENTAL-PHYSICAL ABILITIES
486 -NEEDS AND SATISFACTION
232 -EDUCATIONAL NEEDS, GOALS
FREQ.-PLANNING PROCESS
284 -RELAT. WORK TO NON-WORK ROLES
224 -NEED FOR CAREER PLANNING
80 -PROCESSES OF CAREER PLANNING
248 -LOCATING AND USING INFORMATION
352 -CAREER AND EDUCATION OPPORTUN.
144 -EDUCATIONAL ROLE IN PLANNING
FREQ.-OCCUPATIONAL LEVEL(S)
440 -PROFESSIONAL AND TECHNICAL
224 -MANAGERS AND OWNERS
195 -CLERICAL
243 -SALES AND SERVICE
241 -CRAFTSMEN
384 -OPERATIVES AND LABORERS

FREQ.-OCCUPATIONAL AREA
226 -CONSTRUCTION
204 -MANUFACTURING
246 -NATURAL RESOURCES
285 -TRANSPORTATION
189 -MARKETING AND ADVERTISING
332 -COMMUNICATIONS
159 -GOVERNMENT AND FINANCE
159 -PUBLIC UTILITIES
274 -EDUCATION AND RESEARCH
290 -HEALTH AND WELFARE
218 -RECREATION
181 -ARTS AND ENTERTAINMENT
323 -PERSONAL SERVICES
206 -CONSUMER AND HOMEMAKING

FORM COMPLETION TIME:

FREQ.	RESPONSE CATEGORY
569	UNDER 3 MINS.
576	3 TO 6 MINS.
279	OVER 6 MINS.

APPENDIX E

EFFECTIVENESS AND EFFICIENCY OF DATA AND PROCESS EVALUATION SYSTEM

Scoring Self-Evaluation Forms

The self-evaluation booklets were distributed to teachers by the project directors on September 15, 1972. Since project directors or their designate would provide the in-service training to teachers, each director attended a training session which described the procedures for completing the form. Teachers began completing the forms during the month of October. In some instances forms were not completed until November because of delayed in-service training sessions.

Table 8 shows the number of teachers who submitted forms for each of the seven months data were collected and the number of forms that had to be corrected and re-scored. It should be noted, however, that each form rejected by the computer had already been edited by both the project director and a member of the RCU staff.

Table 8

NUMBER OF TEACHER SELF-EVALUATION FORMS SCORED AND RE-SCORED DURING THE 1972-73 ACADEMIC SCHOOL YEAR

(TOTALS FOR SEVEN CAREER EDUCATION PROJECTS)

Month	Initial # Scored	Number Re-Scored	Error Rate
October	467	339	73%
November	543	116	21%
December	457	62	14%
January	440	66	15%
February	477	65	14%
March	475	51	11%
April	365	45	12%
Total	3,224	744	23%

Table 8 indicates that a total of 3,224 forms were scored for the 498 participating teachers. During the seven month period, 744 forms had to be re-scored at least once. This indicates that there was, on the average, about a twenty-three percent error rate in scoring the forms. The highest error rate was seventy-three percent (73%) for the month of October and gradually improved to a low of eleven percent (11%) in March. It should be noted, however, that each form was subjected to a very critical edit by the computer. That is, if only one circle or section of the form was not filled in correctly, the entire form was rejected and had to be re-scored. Consequently, while the percentage of forms re-scored was rather high, the actual number of significant errors were probably much lower. Records of the number of errors made per form were not kept.

The findings suggest that increased use of and familiarity with the instrument tends to substantially reduce the number of errors made by teachers. Additional modifications in the form and more in-service training may even further reduce the number of errors and thus increase the effectiveness of the instrument for collecting this type of data.

The efficiency of this data collection process can be judged in terms of the cost per teacher as compared with other methods of data collection. The cost of printing the instrument was about $1.16 per teacher. The average cost for scoring (and re-scoring) the forms was $.42 per teacher (over the seven month period - $.06 per form). Thus the total cost for collecting seven months of data from each teacher was approximately $1.58.

To collect and keypunch the same data, using a more standard data collection procedure would have cost about $11,000. The average cost per teacher would have been $19.30 for the seven month period. That is, it would have taken twenty-six computer cards per month per teacher to record the same data collected via the optical scan form. A total of 90,636 cards would have been required for the 498 teachers during the seven month period. The cost of keypunching alone would have been nearly $10,375. Thus, by using the optical scan instrument, there is a net savings of $17.72 per teacher with a total savings of nearly $8,825.00. consequently, although the instrument had shortcomings in terms of its effectiveness (accuracy), it appeared to represent a very efficient way to collect and score large quantities of data.

In order to further assess the effectiveness of the evaluation system a questionnaire was distributed to each of the 498 participating teachers in May of 1973. The questionnaire was designed to determine the relative reliability and validity of the data collected and assess the general utility of the evaluation system. The questionnaire consisted of thirteen (13) items. The first two referred to when the self-evaluation forms were filled out (daily, weekly, or monthly) by each teacher and how accurately the teachers were able to describe the instructional activities in which they engaged. Items numbered 3 through 10 were concerned with the clarity of instructions and ease in completing the self-evaluation forms. Items 11 and 12 were related to the general validity of the instrument; and the final question provided the opportunity for teachers to give their personal opinions about the self-evaluation form and informational feedback system.

The population of teachers who received the questionnaire included all teachers who had been involved in the exemplary career education projects during the 1972-73 school year. The number of teachers participating within each district at each school level is shown in Table 9. A total of 498 questionnaires were sent to individual teachers; 283 were returned to the RCU for analysis. This represents a return rate of fifty-seven percent(57%).

Table 9

SUMMARY OF RETURNS FOR TEACHER EVALUATION QUESTIONNAIRE

PROJECT	Elementary		Junior High		Senior High		Totals		
	Number Sent	Number Returned	Number Sent	Number Returned	Number Sent	Number Returned	Number Sent	Number Returned	Percent Returned
01	8	0	13	8	12	5	33	13	39.4
02	15	9	7	0	1	0	23	9	39.8
03	113	101	-	-	-	-	113	101	89.0
04	21	19	23	19	-	-	44	38	86.3
05	122	75	67	11	-	-	189	86	45.5
06	57	0	-	-	-	-	57	0	00.0
07	39	36	-	-	-	-	39	36	92.3
TOTALS	375	240	110	38	13	5	498	283	56.8

To analyze the questionnaires which were returned, a frequency distribution was tabulated for each response to the first twelve (12) items. A chi-square, goodness-of-fit test of significance was then run on each item independently. It was hypothesized that the distribution of observed responses would not differ significantly from that of a rectangular frequency distribution. A compilation of the data collected on each of these items and the computation of the chi-square values is presented in Table 10.

The chi-square statistics calculated for the goodness-of-fit tests illustrate that the distribution of the response frequencies for all the items differed significantly from the hypothesized rectangular distribution. In each case, the probability of achieving the specific chi-square value or

Table 10

SUMMARY OF RESPONSES TO QUESTIONNAIRE BY PERCENTAGES

Item	Response	a	b	c	d	e	X^2	p-value
1	In general, when did you fill in the teacher self-evaluation form for career education related activities?	4.1	9.0	9.0	3.0	74.8	503.51	.001
2	How accurately were you able to "describe" the career education activities you taught?	4.4	58.1	31.9	4.8	0.7	329.29	.001
Item	Response	1	2	3	4	5	X^2	p-value
3	How clear are the directions for completing the form?	7.6	21.0	37.0	25.7	8.7	83.16	.001
4	How complete are the directions on the form?	4.7	14.9	36.6	33.0	10.9	108.63	.001
5	Is the format of the instrument laid out in a manner which is easy to follow?	13.6	18.3	29.7	30.4	8.1	53.05	.001
6	Is the material included in the instrument comprehensive?	4.8	16.7	34.8	29.3	14.4	78.00	.001
7	Is the instrument flexible enough to allow marking most career education activities?	5.1	14.5	27.6	38.2	14.5	92.21	.001
8	How would you rate the amount of time required to use the instrument?	3.0	11.9	33.1	27.9	24.2	81.53	.001
9	How valuable is the printed feedback to you as a teacher?	26.4	35.9	27.8	8.1	1.8	112.96	.001
10	Did you have difficulty marking the "Identification Code" section?	1.4	3.9	12.0	14.1	68.6	433.06	.001
Item	Response	Yes	No				X^2	p-value
11	Have you made changes in your career education activities as a result of the feedback you received?	23.6	76.4				75.46	.001
12	Should the forms be modified before they are used again?	71.6	28.4				48.92	.001

larger was less than .001 ($p<.001$). The conclusions and/or recommendations resulting from the analysis of each item are noted below.

Item #1: The great majority of teachers waited until the end of each month to complete the form. This may have been one important reason why many teachers found it difficult to classify their instructional activities and why some felt it was time-consuming to complete the form. It may have also resulted in an inaccurate reporting of activities.

Item #2: Although most teachers felt the instrument allowed them to describe their activities very accurately or fairly accurately, a number felt the instrument did not enable an adequate description of their efforts. This may have been due to a need for greater clarification of the various sections of the form or the need for teachers to record their activities on a more frequent basis.

Items #3 and #4: The directions for completing the form were, for the most part, clear and complete. However, responses indicate that the directions may have to be changed for greater clarity. A carefully planned in-service training program might eliminate some of the problems encountered with the directions.

Items #5 and #7: Apparently the physical format of the instrument did not create a great deal of misunderstanding and there was sufficient flexibility for marking most activities. On the other hand, the difficulties perceived by some individuals may be alleviated by modifications in the form.

Item #6: The response distribution for this item indicates a feeling of general adequacy with respect to the instrument's comprehensiveness.

Item #8: Even though many teachers tended to feel the amount of time required to complete the form was minimal, a greater proportion may have felt this way if they had filled out the form on a daily basis rather than monthly.

Item #9: The perceived utility of the computer printout (feedback information) sent to each teacher was very low. This indicates a need to either discontinue this part of the formative evaluation or include a discussion of the purpose and the interpretation of the form in an in-service training program.

Item #10: Most teachers found it relatively easy to complete the information required for the"Identification Code" section of the form. Those who found it difficult may have been confused in classifying their curriculum area(s). This section may have to be changed on the revised form.

Item #11: The lack of change in instructional activities resulting from the feedback received by each teacher via the computer printout may have been a function of the need to clarify the purpose of this information. However, it may be that no change should have been reported.

Item #12: In general, the responses to this item indicate a need for a detailed in-service training program emphasizing the purpose of the self-evaluation instrument and the computerized feedback. Attention must also be given to increasing the clarity of the directions for completing the form and operationally defining the career education terminology used.

Each teacher made one or more subjective statements about the form or the computer printouts they received. These comments, in general, are summarized by the following seven statements:

1. The time required to complete the form was not worth the feedback received.

2. The instrument was vague in terms of
   a) directions for completing the form, and
   b) the instructional activities to be recorded.

3. The responses required were sometimes too general to be of value.

4. The responses required were sometimes too specific to be of value.

5. The purpose of the computer printout was unclear.

6. It was difficult to classify instructional activities.

7. The ambiguity of the various sections may result in inconsistent teacher responses.

It seems safe to conclude that there was some question as to the effectiveness of the formative (process) evaluation system as far as teachers were concerned. Some of the major problems pertaining to its effectiveness are as follows:

1. Teachers did not complete the form on a daily basis, but rather completed them at the end of the month. Consequently, the validity and reliability of their responses can be questioned.

2. Even though forms were completed at the end of the month, teachers believed that the data were quite accurate.

3. Directions for completing the form can and should be improved.

4. Modifications in the coding information blocks and format of the data collection part of the form can and should be improved.

5. Computer printouts were of questionable value to teachers although in-service training may reduce this problem.

Teachers' Assessment of the System for Obtaining Feedback About Their Career Education Activities

Identification Codes:

Check each category at the rating level you choose.

1. How clear are the directions for completing the form?	1 | 2 | 3 | 4 | 5	Unclear	Very Clear
2. How complete are the directions on the form?	1 | 2 | 3 | 4 | 5	Incomplete	Complete
3. Is the format of the instrument layed out in a manner which is easy to follow?	1 | 2 | 3 | 4 | 5	Confusing	Easy to Follow
4. Is the material included in the instrument comprehensive?	1 | 2 | 3 | 4 | 5	Inadequate	Adequate
5. Is the instrument flexible enough to allow marking most career education activities?	1 | 2 | 3 | 4 | 5	Inflexible	Flexible
6. How would you rate the amount of time required to use the instrument?	1 | 2 | 3 | 4 | 5	Too Much Time Required	Not Too Much Time Required
7. How valuable is the printed feedback to you as a teacher?	1 | 2 | 3 | 4 | 5	Little Value	Very Valuable
8. Did you have difficulty marking the "Identification Code" section?	1 | 2 | 3 | 4 | 5	Much Difficulty	Little Difficulty

9. Have you made changes in your career education activities as a result of the feedback you received? Yes _____ No _____

10. What improvements in the instrument or the computer printout would you suggest? (List them)

PART II

ASSESSING THE IMPACT OF CAREER EDUCATION ON STUDENT ACHIEVEMENT

INTRODUCTION

Most of the national and state efforts toward implementing career education have been devoted to the in-service training of teachers and the development of curriculum and instructional materials. Relatively little effort has been expended towards developing valid and reliable criterion instruments to assess the impact that instructional programs have had on students. This is the second part of the evaluation report which deals primarily with the relative impact career education projects in Minnesota have had on the cognitive achievements of students in grades 1-9.

Purposes and Objectives

The purposes of this study were twofold: (1) to determine whether the instruments developed were reliable and sensitive to differences between and among various criterion groups and (2) to assess the relative impact the seven (7) career education projects had on their students. In order to determine whether these purposes were attained, the following specific objectives for the study were posed.

Objective #1: To determine whether the career education tests were reliable and capable of discriminating among students in experimental and control groups at different grade (maturity) levels in terms of mean scores on the 1-3, 4-6, and 7-9 career education tests respectively-

Objective #2: To determine whether there were differences between experimental and control groups in terms of the mean scores of students on the 1-3, 4-6, and 7-9 career education tests respectively.

Objective #3: To determine whether there were differences among the seven (7) exemplary projects in terms of the mean scores of students on the 1-3, 4-6, and 7-9 career education tests respectively.

PROCEDURES

Instrumentation

A final form of three criterion instruments was developed to measure the cognitive achievement of students in grades 1-3, 4-6 and 7-9 respectively. A pilot test of items was conducted in the fall of 1972 and as a result appropriate items which met specific criterion were selected and/or revised for inclusion in the final form of the instrument. (Smith, et al, 1973) Only a brief description of the rationale used to develop the three career education tests and the content of each test is provided in this report.

It is generally accepted that a comprehensive "product" evaluation of career education must include an assessment of both the cognitive and affective domains. The first phase of the evaluation (1972-73) was concerned only with developing tests to measure the cognitive achievements of students; subsequent phases will emphasize the development of instruments to measure a student's attitude toward the world of work in grades 1-9. Because most of the exemplary career education projects in Minnesota dealt only with elementary and junior high school students, criterion measures for the senior high school students were not developed.

The rationale for career education developed by the Minnesota RCU suggests that the first three stages of career development are: (1) occupational awareness (grades K-3), (2) occupational awareness and orientation (grades 4-6), and (3) occupational exploration (grades 7-9). These stages reflect a hierarchy of career development and student competencies. Therefore, separate instruments, measuring similar career education concepts, were developed for each of the three stages. Also, because of the developmental growth and/or maturity process, items were generated in a manner such that they would be sensitive to grade or maturity differences among students. Whether the tests are sensitive to differences between experimental projects and control groups was perceived as a function of the extent to which their students and/or their instructional programs differ.

The rationale and model also suggests that there are four major components which must be considered and taught as a part of career education: (1) career personality, (2) career environment, (3) career decision process, and (4) work adjustment. These components and the relationship among them are described in more detail in other sources (Moss, Smith, Copa, 1971; Smith, et al, 1973). Tests were developed for two of the sub-components: (1) career environment, and (2) decision making. These components were operationally defined in terms of the following content areas (scales) which are also shown in Appendix A: (1) industries, (2) occupational levels, (3) abilities, (4) needs--reinforcers, (5) working conditions, (6) career decision processes, and (7) employment trends. Items were systematically developed to measure student knowledge about selected aspects of each sub-category.

K-3 Test: The first instrument developed was designed to measure student "awareness" about the world of work. It was a 29 item test which was read to students by the test administrator and which required students to recognize and discriminate among pictures of occupational workers. Students were directed to put an "X" under the picture which best answered the question. Test items were generated to measure knowledge about the following content areas: (a) industries, (b) occupational levels, (c) ability requirements, (d) needs and/or job satisfactions, and (e) working conditions or characteristics.

4-6 Test: The second instrument was designed to measure the cognitive knowledges of students in grades 4-6. It was a 52 item, self-administered test in which students made their responses on a separate answer sheet designed to be scored by optical scanning equipment. The test consisted of 32 matching items and 20 multiple choice items. The content areas measured by the 4-6 test included (a) industries, (b) occupational levels, (c) ability requirements, (d) needs and/or job satisfactions, (e) working conditions, and (f) career decision making processes.

7-9 Test: The third instrument was designed to measure the cognitive knowledges of students in grades 7-9. It was a 56 item, self-administered, multiple choice test in which students made their responses on a separate answer sheet designed to be scored by optical scanning equipment. The content domains measured by the test included: (a) industries, (b) occupational levels, (c) ability requirements, (d) needs and/or job satisfactions, (e) working conditions, (f) career decision making process and (g) employment trends.

Each of the tests was considered to be a "power" test rather than a "speed" test, but could be administered in about 30-45 minutes.

Population

Two sub-populations of students were identified for this study. One population was defined as "experimental" and the other was defined as "control". The experimental population was defined as all of the students in grades 1-9 who were receiving instruction in career education from teachers participating in each of the seven experimental career education projects. Teachers who participated in the project were defined as those who were selected to complete a monthly teacher self-evaluation form. The "control" population was defined as selected classes of students in either the experimental projects or in separate schools who, according to the project directors or the school principal, respectively, had not received formal instruction in the area of career education. In those instances where not all of the teachers were participating in the exemplary project, the project director selected classes of students within the school district which were to serve as an appropriate control group. In instances where all of the teachers in the district were involved in the experimental project, classes of students in a separate, but comparable school in the geographic area were selected as the appropriate control group.

Table 2 shows the total number of students by grade level and by experimental and control groups who participated in the evaluation study. There was a total of 10,901 students involved in the study with 8048 defined as "experimental" students and 2853 defined as "control" students. The numbers of students within each experimental project differed greatly because of the different number of teachers participating within each project. Each of the seven projects are numbered 01 through 07 respectively.

Table 2

POPULATION OF STUDENTS IN EXPERIMENTAL AND CONTROL SCHOOLS WHO WERE ADMINISTERED CAREER EDUCATION TESTS IN GRADES 1-9

Grades and Treatments		01	02	03	04	05	06	07	Total
Experimental Students	1	18	25	356	76	204	206	119	1004
	2	19	28	365	79	233	248	143	1115
	3	19	86	438	83	226	216	129	1197
	Sub Total	56	139	1159	238	663	670	391	3316
	4	64	27	403	89	245	304	125	1257
	5	163	104	403	83	293	218	151	1415
	6	194	50	372	104	240	233	161	1354
	Sub Total	421	181	1178	276	778	755	437	4026
	7	34	--	--	87	75	--	--	196
	8	22	--	--	91	78	--	--	191
	9	50	93	--	86	90	--	--	319
	Sub Total	106	93	--	264	243	--	--	706
	Total	583	413	2337	778	1684	1425	828	8048
Matching Control Students	1	17	53	53	53	45	44	50	315
	2	16	44	53	55	54	51	40	313
	3	24	46	55	39	52	49	52	317
	Sub Total	57	143	161	147	151	144	142	945
	4	31	45	54	48	47	24	44	293
	5	33	59	61	53	52	51	48	357
	6	94	55	45	50	53	45	51	393
	Sub Total	158	159	160	151	152	120	143	1043
	7	60	76	--	54	100	--	--	290
	8	96	72	--	57	101	--	--	326
	9	27	75	--	51	96	--	--	249
	Sub Total	183	223	--	162	297	--	--	865
	Total	398	525	321	460	600	264	285	2853

Test Administration

The tests were administered to students within the experimental projects by substitute teachers from each of the respective school districts. A test administrator's manual was written and a one day workshop was conducted to inform the substitute teachers about the correct procedures for administering each of the three career education tests. The staff of the Minnesota RCU administered the tests to students in the schools identified as control groups. Tests were administered simultaneously to students in both the experimental and control schools during the first and second week of May, 1973.

Data Analysis

Data for the K-3 test were keypunched and then scored and analyzed by specially developed computer programs. Answer sheets for the 4-6 and 7-9 test were read and scored by the optical scanning equipment available at the Student Counseling Bureau, University of Minnesota and then analyzed by specially developed computer programs. The following descriptive statistics were used to analyze the data: (a) frequency, (b) means, (c) standard deviations, (d) Hoyt's reliability coefficient and (e) percentages. Means were computed for both total scores and separate scale scores, but only the mean scores for the total test are presented in this report.

FINDINGS

Objective #1:

> To determine whether the career education tests were reliable and capable of discriminating among students in experimental and control groups at different grade (maturity) levels in terms of their mean scores on the 1-3, 4-6, and 7-9 career education tests respectively.

In order for the three tests to be of any use as a criterion measure, they must be reliable and capable of discriminating between or among various criterion groups. It was hypothesized that if they were reliable and sensitive to differences among grade or maturity levels, the tests would then be capable of detecting differences between experimental and control projects where, in fact, instructional differences existed.

Table 3 shows the data for the three tests separately by grade level within experimental, control, and for the combined groups of students. The findings are discussed separately for each of the three career education tests.

Table 3

A COMPARISON OF EXPERIMENTAL AND CONTROL GROUPS BY GRADE LEVEL FOR THE 1-3, 4-6 AND 7-9 TESTS RESPECTIVELY

GRADE LEVELS BY TESTS		Experimental					Control					Combined Groups				
		N	$\overline{X}$	% Corr.	Sd	r	N	$\overline{X}$	% Corr.	Sd	r	N	$\overline{X}$	% Corr.	Sd	r
1-3 Test (29 Items)	1	1004	12.17	42%	3.40	.48	315	12.21	42%	3.44	.51	1319	12.19	42%	3.42	.50
	2	1115	15.22	52%	3.65	.56	313	14.51	50%	3.64	.56	1428	14.87	51%	3.65	.56
	3	1197	17.26	60%	3.63	.57	317	16.91	58%	3.51	.54	1514	17.09	59%	3.57	.56
	Totals	3316	14.88	51%	3.5[illegible]	.54	945	14.54	50%	3.53	.54	4261	14.72	51%	3.55	.54
4-6 Test (52 Items)	4	1258	22.28	43%	6.13	.71	293	21.66	42%	5.89	.69	1551	21.97	42%	6.01	.70
	5	1415	26.23	50%	6.38	.74	357	25.88	50%	5.93	.70	1772	26.06	50%	6.16	.72
	6	1354	29.10	56%	6.38	.75	393	28.39	55%	6.11	.72	1747	28.75	55%	6.25	.74
	Totals	4027	25.87	50%	6.30	.73	1043	25.31	49%	5.98	.70	5070	25.59	49%	6.14	.72
7-9 Test (56 Items)	7	196	29.76	53%	9.34	.87	290	29.80	53%	7.77	.80	486	29.78	53%	8.56	.84
	8	191	32.77	59%	8.63	.85	326	33.79	60%	8.37	.84	517	33.28	59%	8.50	.85
	9	313	37.34	67%	8.40	.85	249	36.89	66%	7.54	.81	562	37.12	67%	7.97	.83
	Totals	700	33.29	60%	8.99	.86	865	33.49	60%	23.68	.82	1565	33.39	60%	8.34	.84

Findings: K-3 Test A total of 4261 students were administered the career education test in grades 1-3; 3316 and 945 students were enrolled in the experimental and control schools respectively.

The test appeared to be equally reliable for both experimental and control students, although the reliability coefficients were not very high (averaged about .54). Reliability coefficients ranged from a low of .45 to a high of .57. In general, the tests seemed to be slightly more reliable for the older students than for the younger students.

It seems apparent that the 1-3 test consistently detected differences among grade or maturity levels for both experimental and control groups. That is, the mean scores and percent of items correct were consistently lower for first graders than the second graders and consistently lower for second graders than the third graders for both the experimental and control groups.

The complete data for each of the experimental and control groups by grade level is shown in Appendix B. The findings previously discussed are also supported by these data: (1) reliability coefficients ranged from a low of .33 to a high of .75 with the highest reliabilities being achieved by the older students and (2) the mean scores for students within each of the experimental and control projects was in every case lower for first graders than second graders and lower for second graders than third graders.

Findings: 4-6 Test A total of 5070 students were administered the 4-6 career education tests; 4027 students comprised the experimental group with 1043 students in the control group. The test seemed to have equally high reliability coefficients for both experimental and control groups. The average reliability coefficient was about .72 and ranged from a low of .69 to a high of .75. It appeared that the tests were slightly more reliable for the older students than the younger students.

It also appears that the 4-6 test was very sensitive to differences among grade or maturity levels for students in both the experimental and control groups. That is, in terms of the mean scores and percent of items correct, fourth graders consistently scored lower than fifth graders and fifth graders consistently scored lower than sixth graders.

Appendix B shows the complete data for each of the experimental and control groups by grade level. These data support the findings previously discussed: (1) the average reliability was .72 and ranged from a low of .54 in one project to a high of .84 in another project and (2) the 4-6 test, in every instance, was capable of detecting differences among grade or maturity levels for students in both the experimental and control groups.

Findings: 7-9 Test A total of 1564 students were administered the career education tests for grades 7-9; 700 were enrolled in experimental projects and 865 were enrolled in the control schools.

The 7-9 test appeared to have equally high reliability coefficients for students in both the experimental and control groups. The average reliability coefficient for the combined groups was .84 and ranged from a low of .80 to a high of .87. In general, the test seemed slightly more reliable for the students in the experimental projects than for the students in the control projects.

The test also seemed to be quite sensitive to detecting differences among grade or maturity levels for students in both the experimental and control groups. In terms of mean scores and percent of items correct, seventh graders consistently scored lower than eighth graders and eighth graders consistently scored lower than ninth graders.

The complete data for the 7-9 test by grade level for each of the experimental and control groups is shown in Appendix B. These data support the previously discussed findings that (1) the test was equally reliable for both experimental and control groups with the reliability coefficients ranging from a low of .77 to a high of .91 and (2) the test, in every instance, was sensitive to differences among grade or maturity levels for both experimental and control groups.

In general, it seems safe to conclude that (a) the 4-6 and 7-9 tests have higher and more satisfactory reliabilities than the 1-3 test although all tests were equally reliable for students in both experimental and control groups and (b) the tests were consistently sensitive to and were capable of discriminating among grade or maturity levels for students in both experimental and control groups. These findings suggest that the tests are sufficiently reliable and sensitive to detect and interpret differences between and among experimental and control groups where, in fact, meaningful differences exist.

Objective #2: To determine whether there were differences between experimental and control groups in terms of the mean scores of students on the 1-3, 4-6, and 7-9 career education tests respectively.

A series of three tables are used to present the data concerning the relative differences between experimental and control groups for each of the three career education tests. These data are intended to demonstrate whether the career education tests are sensitive to differences between students who have received formal instruction in career education and those who have not received formal instruction in career education. It was hypothesized that there would be greater instructional differences (although the exact nature of the differences are not known) between experimental and control groups than among the seven experimental projects.

Table 4 shows the data for students in experimental and control groups (collapsed across projects) for each of the three career education tests.

Table 4

A COMPARISON OF EXPERIMENTAL AND CONTROL GROUPS
FOR THREE CAREER EDUCATION TESTS

Grades	Experimental				Control				Combined Groups			
	N	$\overline{X}$	% Corr.	r	N	$\overline{X}$	% Corr.	r	N	$\overline{X}$	% Corr.	r
1-3 Test (29 Items)	3316	14.88	51%	.54	945	14.54	50%	.54	4261	14.72	51%	.54
4-6 Test (52 Items)	4027	25.87	50%	.73	1043	25.31	49%	.70	5070	25.59	49%	.72
7-9 Test (56 Items)	700	33.29	60%	.80	865	33.49	60%	.82	1565	33.39	65%	.84

Table 5

A COMPARISON OF EXPERIMENTAL PROJECTS
AND THEIR RESPECTIVE CONTROL GROUPS
IN TERMS OF STUDENT TESTS SCORES
FOR GRADES 1-3, 4-6 AND 7-9

Treatment Groups		PROJECTS																					Grand Totals		
		01			02			03			04			05			06			07					
		N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r	N	$\bar{X}$	r
1-3	Exp.	56	15.34	.63	139	15.41	.66	1159	15.15	.68	238	14.27	.69	663	15.18	.65	670	14.86	.56	391	15.02	.68	3316	15.03	.65
	Cont.	57	14.12	.70	143	15.03	.64	161	14.81	.65	147	13.97	.66	151	14.30	.62	144	15.37	.52	142	13.96	.67	945	14.51	.64
4-6	Exp.	422	25.30	.77	181	27.19	.75	1178	26.72	.77	276	26.74	.80	778	25.20	.77	755	25.06	.79	437	26.46	.77	4027	26.10	.77
	Cont.	158	25.27	.72	159	26.57	.74	160	25.17	.75	151	24.40	.79	152	25.84	.78	120	25.67	.75	143	26.59	.73	1043	25.64	.75
7-9	Exp.	106	31.10	.91							258	32.62	.86	243	34.45	.85							607	32.72	.87
	Cont.	183	31.73	.88							162	36.15	.79	297	33.38	.82							865	33.46	.83

By collapsing the data for experimental and control groups for each of the three tests, there appears to be almost no difference between experimental and control groups on any of the three tests. The differences between the mean scores for experimental and control groups on the 1-3, 4-6, and 7-9 career education tests are .34, .56, and .20 respectively. Students in the experimental projects for tests 1-3 and 4-6 had slightly higher mean scores than the students in the control group, but the trend was reversed for the 7-9 test; students in the control groups scored higher than students in the experimental groups. It should be noted, however, that students in only three experimental and control schools were administered the 7-9 test, thus, the comparitive differences may be misleading. The average percent of items correct and the average reliability coefficients for students in the experimental and control groups were almost identical.

Table 5 presents the data separately for each of the matched experimental and control projects (sites) according to student performance on the 1-3, 4-6, and 7-9 career education tests respectively. There appear to be very little difference in the mean scores of students between each of the matched experimental and control groups for any of the three career education tests, although the reliability coefficients for the matched projects are quite similar and appear to be within the range of acceptance.

Differences in mean scores for matched control-experimental groups for the 1-3 test ranged from a low of -.51 in favor of the control project group (project 06) to a high of +1.06 in favor of the experimental group (project 07). While most of the observed differences were not very large, it appears that experimental students consistently scored higher on the test than their counterparts in the control groups.

The differences in mean scores for matched experimental and control groups for the 4-6 test ranged from a high of .64 in favor of a control group (project 05) to a high of 2.34 in favor of an experimental group (project 04). The reliability coefficients were approximately the same and satisfactorily high for each of the matched experimental and control groups. Four out of the seven comparisons of differences in mean scores favored the experimental groups and the remaining three comparisons favored the control groups.

Matched experimental and control groups for the 7-9 career education test were available for only three projects which involved a total of 1472 students. The reliability coefficients were quite high and very similar for each of the matched experimental and control groups. The largest difference between mean scores was 3.53 in favor of a control group. Of the three comparisons made, two of the differences favored the control groups and only one favored the experimental group.

The complete data for each of the experimental and control groups is presented by grade level in Appendix B. While it is apparent that the differences between experimental and control projects are not very large, it seems important to assess whether there is a trend in favor of the experimental or the control groups.

Table 6 summarizes the data by grade level for the 1-3 and 4-6 career education tests in terms of the number of times the mean scores for the experimental groups were higher or lower than the mean scores for the matched control groups.

Data are not presented for the 7-9 test because of the limited number of comparisons and projects involved.

Table 6

NUMBER OF TIMES THE MEAN SCORES OF EXPERIMENTAL GROUPS WERE HIGHER OR LOWER THAN CONTROL GROUPS FOR TESTS 1-3

	Grade 1	Grade 2	Grade 3	Totals
Higher	4 19%	5 23%	5 23%	14 67%
Lower	3 14%	2 10%	2 10%	7 33%
Totals	7 33%	7 33%	7 33%	21 100%

Table 7

NUMBER OF TIMES THE MEAN TEST SCORES OF EXPERIMENTAL GROUPS WERE HIGHER OR LOWER THAN CONTROL GROUPS FOR GRADES 4-6

	Grade 4	Grade 5	Grade 6	Totals
Higher	3 14%	4 19%	3 14%	10 48%
Lower	4 19%	3 14%	4 19%	11 52%
Totals	7 33%	7 33%	7 33%	21 100%

The data suggest that there seems to be a trend for experimental students to score higher on the 1-3 career education test than their counterpart control groups (67% of the comparisons were in favor of the experimental groups and 33% favored the control groups). Similar trends do not exist for the students who took the 4-6 test. Forty-eight percent of the comparisons favored the experimental groups, but fifty-two percent of the comparisons favored the control groups.

It seems safe to conclude that there was relatively little difference between the performances of students in matched experimental and control groups. The three tests seemed quite reliable and capable of detecting differences, but the magnitude of these differences was relatively small. On the other hand, while the magnitude of the differences were relatively small, there does seem to be a trend (at least in grades 1-3) for students in experimental groups to score higher on the tests than students in the control groups. These trends were not as evident for students in grades 4-6 and appeared to be reversed for students in grades 7-9 (control groups scored higher than experimental groups).

It is also interesting to point out that the tests appeared to be equally reliable for both experimental and control groups and have sufficiently high reliability coefficients (with the possible exception of the 1-3 test) such that the findings can be interpreted with a degree of confidence.

Objective #3:

> To determine whether there were differences among seven (7) exemplary career education projects in terms of the mean scores of students on the 1-3, 4-6, and 7-9 career education tests respectively.

One of the original goals of the seven site career education model was to provide each site the opportunity to implement the concept of career education in different ways and using different combinations of instructional techniques. The purpose of this objective is to determine whether the three career education tests were sensitive to instructional differences among the seven (7) experimental projects.

Table 8 shows the combined mean scores and reliability coefficients for each of the seven exemplary projects for the 1-3, 4-6, and 7-9 career education tests respectively. Data are collapsed by grade level for each of the experimental projects for each of the three tests.

A total of 316 students in the seven (7) exemplary projects were administered the 1-3 career education tests.

The data shown in Table 8 suggest that while the test was apparently sensitive to differences among exemplary projects, the magnitude of these differences were quite small. The mean scores ranged from a high of 15.29 to a low of 14.19 and the difference in mean scores ranged from a low of .04 to a high of 1.1. Considering data were collapsed across grades, these differences can hardly be thought to be "educationally significant". The reliability coefficients for the comparisons were generally low (average of .53) but were quite consistent among the comparison groups. While slight differences were detected, it is not known whether these were due to instructional differences among the programs or to the reliability of the tests. Additional research may be needed to answer this question.

A total of 4027 students in the seven (7) exemplary projects were administered the 4-6 career education test. The mean scores for the seven projects ranged from a high of 26.80 to a low of 24.16. Differences in mean scores among projects ranged from a high of 2.64 to a low of .16. The test seemed to be quite reliable for all of the comparison groups; the average reliability coefficient was .73 and the coefficients ranged from a low of .70 to a high of .76.

Table 8

A COMPARISON OF SEVEN EXEMPLARY PROJECTS IN TERMS OF THE COMBINED DATA FOR THREE CAREER EDUCATION TESTS[1]

Projects	GRADE LEVELS 1-3 N	$\bar{X}$	r	4-6 N	$\bar{X}$	r	7-9 N	$\bar{X}$	r
01	56	15.29	.47	422	24.16	.71	106	29.99	.90
02	139	14.32	.58	181	26.34	.70	[2]93	39.75	.80
03	1520	14.96	.57	1178	26.80	.72			
04	238	14.19	.57	276	26.59	.76	348	32.65	.84
05	663	15.07	.50	778	25.23	.71	243	34.21	.83
06	670	14.82	.45	775	25.39	.76			
07	391	14.92	.59	437	26.14	.71			
Totals	3316	14.80	.53	4027	25.87	.73	700	32.29	.86

[1] Data are collapsed by grade levels for each test.

[2] Data shown are only for 9th grade students.

It appears that the 4-6 test was capable of reliably detecting differences among exemplary projects. Because the reliability for the test was quite high, the findings may suggest that there may, in fact, be differences in instructional emphasis among the projects and that the 4-6 test is capable of detecting these differences.

A total of 700 students in the exemplary projects were administered the 7-9 career education test. The test seemed capable of reliably detecting rather large differences among the four exemplary projects which involved junior high school students. Excluding the one group of ninth grade students (project 02) from the comparisons, the mean scores of the three projects ranged from a low of 29.99 to a high of 34.21 and yielded a range of differences in mean scores from a low of 2.66 to a high of 4.32. The 7-9 test was the most reliable of the three career education tests; reliability coefficients for the comparisons ranged from a low of .80 to a high of .90, yielding an average reliability of .86. Again, because the reliability of the comparisons were quite high, the findings may suggest that students in the three projects did receive different types or amounts of instruction or that the students were already quite different in terms of their knowledge of "work" before the career education projects were started.

The complete data by grade level for the seven exemplary projects are shown in Appendix B. While these data support the previous finding concerning the reliability of the three tests and the relative differences among the seven (7) exemplary projects, the differences are not very systematic when grade level is considered. That is, when making comparisons among the projects by grade level, the first graders may score higher in one project than in another project, but the situation may be just the opposite when comparing differences in mean scores for the second and third graders in the same projects. This may indicate that teachers at certain grade levels within a project were more involved with career education than teachers at other grade levels and that the emphasis at various grade levels was not consistent among the seven exemplary projects.

LIMITATIONS, SUMMARY, AND CONCLUSIONS

Limitations

This study has two types of limitations. The first pertains to the way in which the experimental and control populations were identified. The second limitation involves the validity and reliability of the tests.

The experimental population was defined as all of the students who had received instruction from teachers who were participating in the career education project as identified by the director of each project. While the "process" evaluation provides clues as to the amount of time teachers devoted to career education activities and a gross estimate of the content, the exact content of their instruction as related to the tests which were administered to their students is not known. Also, because of the way in which "control" students were identified, it is not known whether or how these students differed from students in the experimental project in terms of their knowledge of career education or in terms of how much (if any) instructional emphasis was placed on career education. All that can be said is that these students were not receiving "formal" instruction in career education, but it is entirely possible that teachers in these schools did, in fact, teach concepts related to career education as a part of their regular day-to-day classroom instruction. In general, it is not possible to attribute any causal relationships from the findings, however, it is possible to describe differences where differences existed and attempt to suggest possible reasons for these differences.

The second limitation of the study pertains to the validity and reliability of the three career education tests. The tests were developed in a manner that was internally consistent with the rationale and theoretical model for career education developed by the Minnesota RCU. While the project directors were somewhat familiar with the rationale and model, it is likely that their teachers had either no knowledge or at least only limited knowledge of it. Also, neither the teachers or directors had advance knowledge about the concepts included in the tests. Thus, the tests and the findings of the study truly represent an external evaluation of what students should theoretically have learned rather than what they may, in fact, have learned. It may very well be that the tests have limited content validity in terms of the concepts teachers emphasized in their instructional activities. In addition the findings are limited by the reliability of the instruments. In instances where test reliabilities are low, the validity of the findings may be questioned. However, as has been previously shown, the 4-6 and 7-9 tests appear to be quite reliable and thus should yield valid and meaningful conclusions. Less confidence can be placed on the conclusions dealing with the 1-3 career education test.

Summary

The summary of the study follows the sequence in which the objectives and findings of the study were discussed. The major findings of the study are summarized below.

1. Each of the three career education tests appear to be sensitive to differences among grade or maturity levels for both experimental and control groups. While these differences were not large, they were, in all instances, consistent for experimental and control groups separately and collectively.

2. Each of the three career education tests were equally reliable for experimental and control groups. The average reliability coefficients for the 4-6 and 7-9 tests were .75 and .85 respectively and were sufficiently high to place confidence in the findings of the study. The average reliability for the 1-3 test was only about .54. This may suggest that when differences were reported they may, in fact, be real differences or be differences attributable to low reliability. (The low reliability for the 1-3 test was probably due to the length of the test (only 29 items) rather than to any inconsistency in student responses.)

3. Students in experimental projects tended to have slightly higher mean scores on the 1-3 and 4-6 career education tests than their respective control groups. Conversely, students in the control groups tended to have a higher mean score on the 7-9 career education test than their respective experimental groups. Differences for the 1-3 test tended to be quite small, but were considerably larger for the 4-6 and 7-9 tests. In general, the tests seemed to be capable of detecting differences between experimental and control groups where, in fact, differences exist.

4. There were differences among the seven experimental projects in terms of the mean scores of students for each of the three career education tests. These differences were quite small for the 1-3 test, but were considerably larger for the 4-6 and 7-9 tests. However, by looking at the mean scores of the seven exemplary projects by grade level, inconsistencies are evident. That is, it seemed evident that instructional emphasis at various grade levels were quite different among the seven projects, consequently systematic differences among the projects by grade level were not evident.

Conclusions

The conclusions are presented in relationship to the two major purposes of the study:

> (1) To develop a reliable, valid set of career education instruments designed to measure the cognitive achievement of students in grades 1-9, and (2) to assess the relative impact of career education projects on student achievement.

In general, it seems safe to conclude that the three career education instruments used in the study were quite reliable and valid in terms of detecting meaningful differences among various criterion groups of students who were administered the tests. It is apparent that the 4-6 and 7-9 tests possess adequate reliability for the purpose of making meaningful comparisons among a wide range of criterion groups. There may, however, be some question about the reliability of the 1-3 test. It seems likely that this test may have to be lengthened before its reliability can be improved. However, it is encouraging to note that each of the tests were capable of detecting differences (however slight they may have been) among various criterion groups. They were able to detect differences among grade (maturity) levels of students and to detect differences between experimental projects. It is, therefore, concluded that the findings discussed in the study are based on the use of instruments which have demonstrated reliability and construct validity.

In terms of the relative impact that the career education projects had on students, it seems safe to conclude that the impact was minimal. There were only slight differences between experimental and control students or among students in the exemplary projects. However, while the magnitude of these differences were slight, these differences (except in grades 7-9) tended to favor students in the experimental projects.

Obviously, this report raises many interesting (if not perplexing) questions concerning both the characteristics of the instruments as well as the relative impact (or lack of it) of career education instruction on students. Part III of this report will attempt to address these questions by interpreting the results of the findings for the process and product evaluations and speculate about the relationship between the two sets of findings.

APPENDICES

Appendix A:	Content Domains and Elements of Content for Career Education Tests K-9
Appendix B:	A Comparison of Experimental and Control Projects by Grade Level as Measured by Total Test Scores

Appendix A

Table 1

CONTENT DOMAINS AND ELEMENTS OF CONTENT FOR CAREER EDUCATION TESTS K-9

Industry	Occupational Level	Abilities	Needs	Working Condition	Career Decision Process	Employment Trends
Construction	Professional & Technical	Mental Verbal Numerical Spatial Reasoning Reaction Time	Ability Utilization	Training Time	Personal Characteristics	Industrial Growth & Decline
Manufacturing	Managers & Owners	Physical Strength & Size Sex Coordination & Dexterity Senses Age Reaction Time	Achievement	Aptitudes	Sources of Occupational & Educational Information	Trends in Employment of Women
Natural Resources	Clerical	Scholastic Aptitude Basic Learning Skills Interpersonal Skills Occupational Skills Non-Work Skills	Activity	Temperaments	Career Expectations	Causes of Employment Growth & Decline
Transportation	Sales	Specialized Occupational Skills Professional Skills Occ. Skills Ed. Skills Voc-Tech. Skills Attitudes Cog. Skills Manipulative Skills	Advancement	Interests	Career Capacities	Impact of Technology on Employment
Marketing & Advertising	Craftsmen		Authority	Physical Capacities	Career Opportunities	
Communication	Operatives		Company Policies & Practices	Working Conditions	Selection of School Subjects	
Government & Finance	Service Personnel		Compensation		Relationship of School to Career Choices	
Public Utilities	Laborers		Co-Workers			
Education & Research			Creativity			
Health & Welfare			Independance			
Recreation			Moral Values			
Art & Entertainment			Recognition			
Personal			Responsibility			
Consumer & Homemaking			Security			
			Soc. Status			
			Supervision Human Rel.			
			Supervision Technical			
			Variety			
			Working Cond.			
			Autonomy			

APPENDIX B

Table 4

A Comparison of Experimental and Control Projects by Grade Level as Measured by Total Test Scores

Criterion Group by Grade		PROJECTS																														Grand Totals			
		01				02				03				04				05				06				07							
		N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r	N	$\bar{X}$	Sd	r
Experimental	1	18	12.67	2.89	.33	25	12.96	3.26	.45	356	12.08	3.52	.52	76	11.24	3.88	.61	204	12.05	3.21	.42	206	12.67	3.09	.38	119	12.13	3.55	.52	1004	12.26	3.34	.46
	2	19	14.47	2.29	.45	28	13.14	4.64	.75	365	15.31	3.75	.58	79	14.37	3.43	.51	233	15.63	2.55	.54	248	15.03	3.46	.51	143	15.60	3.72	.59	1115	14.79	3.55	.56
	3	19	18.74	3.56	.63	86	16.86	3.52	.54	438	17.50	3.77	.61	83	16.95	3.68	.59	226	17.54	3.49	.54	216	16.75	3.26	.47	129	17.03	3.91	.64	1197	17.34	3.60	.57
	4	65	20.17	5.40	.63	27	22.37	6.03	.71	403	23.34	6.14	.72	89	22.81	6.17	.71	245	21.40	5.85	.69	304	21.88	6.33	.73	125	22.26	5.95	.69	1258	22.25	6.13	.71
	5	165	25.25	5.97	.70	104	27.52	6.28	.74	401	27.18	6.11	.72	83	27.37	6.89	.78	293	25.17	6.36	.73	218	25.37	6.73	.77	151	26.56	6.28	.73	1415	26.23	6.39	.74
	6	194	27.36	7.03	.79	50	29.12	5.37	.66	372	29.89	6.11	.73	104	29.60	6.65	.78	240	29.12	6.06	.72	233	28.92	6.64	.77	161	29.62	5.96	.72	1354	29.10	6.36	.75
	7	34	27.49	10.50	.89									87	29.44	9.37	.87	75	31.35	8.51	.84									196	29.76	9.34	.87
	8	22	27.41	10.61	.90									91	33.98	8.19	.83	78	32.88	8.06	.92									191	32.77	8.63	.85
	9	50	35.46	10.58	.91	93	39.75	6.98	.90					80	34.52	8.07	.83	90	38.40	7.80	.83									313	37.24	8.4[illegible]	.85
Control	1	17	10.24	2.41	.32	53	13.51	1.98	.66	53	11.92	3.42	.50	53	11.53	3.05	.38	45	11.71	3.29	.45	44	14.45	3.21	.45	50	11.00	2.48		315	12.05	3.12	.44
	2	16	12.56	4.02	.64	44	14.77	3.43	.54	53	14.96	3.88	.62	55	14.75	3.35	.49	54	14.02	3.27	.44	51	14.55	3.52	.52	40	14.72	4.27	.69	313	14.34	3.68	.56
	3	24	17.92	2.35	.45	46	17.02	3.47	.56	55	17.45	2.97	.35	39	16.21	4.61	.74	52	16.85	3.63	.55	49	17.06	3.06	.41	52	16.23	3.78	.61	317	16.96	3.41	.52
	4	31	20.65	5.76	.69	45	22.53	6.41	.74	54	22.30	5.71	.67	48	21.25	5.84	.69	47	20.40	6.10	.70	24	21.96	6.48	.75	44	22.27	5.14	.52	293	21.65	5.99	.69
	5	33	23.64	5.58	.64	59	26.73	5.82	.70	61	26.13	6.63	.76	53	24.70	6.23	.73	52	26.81	5.46	.66	51	25.63	5.81	.68	48	26.60	5.35	.65	357	25.85	5.93	.70
	6	94	27.36	5.65	.67	55	29.69	4.73	.54	45	27.33	6.25	.73	50	27.10	8.02	.84	53	29.70	5.70	.69	45	27.71	6.37	.75	51	30.29	5.45	.66	393	28.39	6.11	.72
	7	60	26.25	7.91	.81	76	28.66	7.20	.77					54	33.50	6.31	.72	100	30.79	7.83	.81									290	29.83	7.73	.80
	8	96	34.17	9.60	.83	72	31.11	8.09	.82					57	35.46	6.72	.76	101	34.41	7.84	.82									326	33.74	8.37	.84
	9	27	35.25	7.59	.82	75	37.93	6.49	.75					51	39.75	7.12	.82	96	35.01	7.90	.82									249	36.84	7.54	.81

PART III

INTERPRETATIONS OF THE FINDINGS

The purpose of this section is to relate the findings of the process and product evaluations and suggest some plausible explanations for these findings. This discussion may provide a basis for modifying the evaluation process or instrumentation or it may encourage modification in the way career education is implemented in the seven project schools.

In terms of cognitive achievement, findings indicate that career education instruction apparently had relatively little impact in producing differences (a) between matched groups of experimental and control students and (b) among the students in the different experimental projects. That is, any differences observed, were small and not always in favor of the experimental projects. Three plausible explanations could account for these findings: (1) Instruments used to assess the cognitive achievements of students may not have been valid or reliable, (2) Selection of matched control groups may have been inappropriate or (3) instruction in career education may have been inadequate in terms of the processes used and/or the instructional time spent on career education during the first year of the project. Each of the three factors is discussed separately in the sections that follow.

Validity of Criterion Instruments

The criterion instruments were developed in a manner that was internally consistent with the rationale and model for career education developed by the members of the staff of the Minnesota RCU. Items included on the test were selected on the basis of their ability to (a) discriminate among students at different grade levels and (b) reliably measure the concepts suggested by the rationale (based on a pilot test of the items). The test items represented only a sample of the types of concepts derived from the theoretical model of career education. The items were reviewed by several individuals and groups who were knowledgeable about concepts related to career education. In most instances the items were judged to be an adequate sample of important career education concepts. However, a discrepancy between what career education could theoretically teach and what teachers said they taught became obvious, therefore the instruments may have had limited dace validity. Regarding construct validity, it was reasoned that if the tests could reliably detect differences in student performance among grade levels, then it was likely that the tests could also detect differences among or between programs which differ in the amount of instructional emphasis related to career education. The tests did show internal reliability and a capability for discriminating among students at different grade levels for both the experimental and control groups.

However, it may be argued that the reason larger differences were not found between or among the experimental and control projects was that test items did not sample the content taught. Because of the way in which items were derived, it seems unlikely that they were totally unrelated to the content or concepts taught by teachers even though teachers indicated they placed more emphasis on the development of attitudes than they did on cognitive content. Regardless of the reason, the findings do suggest that additional effort should be devoted to modifying the items and improving the content validity of these cognitive instruments.

Identification of Control Groups:

Another factor which may help to explain the relatively small observed differences between the mean scores of students in experimental and control groups is the manner in which control groups were identified. In general, control groups were identified by either a project director or a school principal as those teachers who (to their knowledge) had not modified their course content to teach career education concepts. It is likely that all teachers, to some extent, teach concepts related to career education as a part of their regular course content, and that educationally significant differences could not be detected because career education concepts were, in fact, taught to students in the control schools. This does not imply that students in the experimental projects did not learn more about career education than students in the control groups, it simply means that they did not learn the concepts included on the tests of cognitive achievement and thus educationally significant differences were not detected between experimental and control projects.

Emphasis on Career Education Instruction:

Another factor that could explain the relatively small differences in the mean scores of students between and among experimental and control groups was the emphasis placed on career education by the teachers in the experimental projects. Instructional emphasis was determined by the responses of teachers to the monthly self-evaluation form used to describe the "processes" teachers used to implement career education in their classrooms. The basic question seems to be "Did teachers spend enough time on career education activities and spend it in a manner that would most likely make the greatest impact on student achievement?"

A partial answer to this question may be provided by looking at a "instructional profile" of an average career education teacher for a seven month period. The average teacher conducted twenty career education activities that were integrated with regular course content. These activities required a total of thirty-five hours of instruction and preparation time, which was devoted primarily to concepts such as self-awareness, occupational industries, and general knowledge about workers. Stated in another way, the average teacher spent about five (5) hours a month or 1.25 hours per week on career education activities that were integrated with the regular course content. This suggests that less than three percent (2.43%) of the teacher's time was spent on instructional activities that were specifically identified as career education instruction.

Assuming that the data provided by teachers on the self-evaluation form were accurate, it can be argued that the amount of instructional emphasis and/or the integration of career education concepts with regular course content was inadequate for making an observable impact on the cognitive achievement of students in the experimental projects. This conclusion suggests that if an observable impact on the cognitive achievements of students is desired, the instructional profile in the experimental projects needs to be changed. It could be changed in the following ways: (a) conduct more instructional activities related to career education, (b) devote more and a greater percent of time to career education each day, week or month, (c) modify instructional emphasis to include concepts related to the career planning process, occupational levels and work role requirements, and (d) teach career education concepts as separate units, classes or at least as separate identifiable aspects of the instructional process rather than integrate the concepts with regular course content. It is also plausible that in one year, it is not possible to detect larger or more educationally significant differences in the cognitive achievement of students between or among the various criterion groups than those observed in this study.

Conclusion:

It seems likely that the findings pertaining to the impact of career education on the cognitive achievement of students can best be explained in terms of a combination of the three factors previously discussed. Therefore, in order to detect a greater impact on the cognitive achievement of students in subsequent years, it may be necessary to (a) modify and improve the sensitivity of the three cognitive career education tests, (b) identify and more appropriately specify the characteristics of the control population, (c) encourage teachers to (1) place greater instructional emphasis on a broader range of career education concepts than they had done proviously and (2) make career education instruction a more identifiable aspect of the instructional program. Additional efforts to evaluate these projects in subsequent years may be required in order to answer many of the questions raised by this discussion.

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